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ABSTRACT

The College of DuPage's 5-year plan for meeting its academic, administrative, and central computing needs is presented. An executive summary reviews the planning process and highlights recommendations and financial considerations. As the first section of the report, the introduction presents the college's demographics, mission and vision statements, and the 5-year institutional goals of the college. A section on the planning process discusses the use of surveys and suggestions from general and ad hoc committees to develop a plan that would be meaningful to the college as a whole. Next, the current computer environment is assessed in terms of governance, computer support, and computer systems and facilities. The section on academic computing describes computer usage in all the major instructional areas of the college as it was identified in the surveys. Administrative computing is assessed in terms of the information processing services that provide the college with the data necessary to make decisions and carry out day-to-day operations. The section on central computing evaluates systems software and hardware, communications, and networking. For each computing area, the report presents appropriate action plans and financial recommendations in terms of hardware, software, and support needs. Finally, all recommendations for academic, administrative, and central computing are summarized, and special financial considerations are highlighted. Appendixes contain computer hardware and software configurations, program proposals, and the survey instruments. (JMC)

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COLLEGE OF DUPAGE INSTITUTIONAL PLAN FOR COMPUTING FY93 - FY95 EXECUTIVE SUMMARY

February 7, 1992

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INTRODUCTION

The College of DuPage is a community college located 25 miles west of Chicago, Illinois in Glen Ellyn. The campus consists of seven buildings on a 265 acre site and three regional centers within 10 miles of the main campus. In addition to a central campus and three in-district regional centers, the college has more than 80 different satellite centers. These range from libraries, elementary and high school classrooms, community houses and churches to municipal buildings and industrial sites.

The college serves District 502 with a population of 830,000 people. In 1990-91 the college served 75,000 different students and the enrollment for fall quarter of 1991 was over 36,300 students. Governed by a seven-member board elected from the district and one non-voting student trustee, the college has 304 full-time faculty, 1,446 part-time faculty, 723 staff, and 48 administrators.

College of DuPage is divided into Central Campus and Open Campus, both administered by one central administration. The Central Campus in Glen Ellyn offers both credit and non-credit programs. Open Campus is responsible for delivering education to off-campus programs, learning labs, skills center, testing, and independent study courses. The central administration provides support services for students and faculty, including planning, computing, admissions, registration and records, research, finance and business services, public relations, grants, foundation, and physical support services.

Mission

Provide educational opportunities of the highest quality for people of any race, creed, gender, or national origin who want to improve their vocational and avocational skills, or enjoy cultural or recreational activities.

Vision Statement

We envision a future in which the quality of life is rich, and the sense of community is strong. While reaffirming our pledge to maintain excellence in our primary objective--the education and development of those we serve--we concurrently accept the challenge to seek unexplored paths which may help prepare our community for the challenges of the next century. We dedicate ourselves to educating and empowering more responsible citizens, promoting a better quality of life for residents of our district, and providing leadership in protecting our natural and human resources.

Five Year Goals

The college has developed a set of five year institutional goals for FY93-FY97. Information technology will in some form impact how each goal is accomplished.

- Design programs, courses and services that include a broad range of strategies that will provide students with the tools for success.

- Improve the quality of processes and services which have an impact on student learning and success in the work environment.
- Prepare all constituency groups to live and work in a culturally diverse global society.
- Design programs, courses, and services which expand opportunity for success of at-risk and underprepared students.
- Design and implement comprehensive assessment and course placement strategies to enhance student success.
- Improve internal communications through more efficient and effective sharing of information by the use of new technology, staff development, shared vision, and establishing of priorities.
- Expand the use of current and new technology to improve learning and support services to meet demands of the college's dynamic growth.
- Plan and manage effectively for rapid growth of the college.
- Encourage Board, faculty and staff to exercise leadership in community college organizations and conferences at the regional, state and national level.
- Review the mission, vision and philosophy (values statements) to insure there is congruence in direction among the three.

Issues

Over the next decade, the College of DuPage will face many problems and new challenges. There are several internal issues and external trends that will impact the direction of the college. The major internal issues deal with the *management of growth, changing characteristics of our students, allocation of resources, maintenance and enhancement of quality and communications*. The major external trends are *changing demographics, limited funding, rapid rate of technology change, utilization of growth, and increased demands for convenient services*.

Today and in the future computing will have an ever increasing role in dealing with major issues and trends. It is very important for the college to be a leader in information technology by using technology in our own operation, as well as by teaching the use of technology to students. Planning for computing is the key element to understanding the real issues and their impact on the institution.

The executive summary provides a summary on issues, goals, recommendations, and financial considerations for academic, administrative, and central computing for fiscal years 1993-1995. The recommendations provide the strategic direction necessary to keep the college in step with technology to take advantage of future advancements. This will allow us to be more efficient and effective with the current resources, while satisfying the future goals of the institution as defined by the vision statement and the college five year goals. The financial considerations are the costs for centrally funded programs. From an academic perspective, any hardware and software costs related to cross discipline student labs and faculty support are centrally funded. For administrative computing, any software and hardware related to cross department applications are centrally funded, as are all mainframe hardware and software for Central Computing. Any hardware and software for an individual department budgeting is the responsibility of the user department.

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Also included in this summary are sections summarizing the staffing needs, the total institutional financial considerations with various funding alternatives and the impact on unit cost. The recommendations are divided into the three types of resources, hardware, software, and support that are needed to meet the goals as defined. Appendix D shows a one-page summary of the planning cycle for all projects identified in this plan. See the individual chapters of the Institutional Plan for Computing for details on the recommendations.

THE PLANNING PROCESS

Overview

An integral part of any successful planning process must be the conscientious contribution to the plan by all its constituents. Management or individual attempts to impose a college computing plan which has not taken into consideration the needs, constraints, and objectives for all areas of the college must certainly be doomed to failure. To avoid such errors, and to make the plan meaningful, we set up a planning methodology, employed carefully constructed surveys, and heeded suggestions from general and *ad hoc* committees. The plan is for three years and is updated on a two year cycle. The planning methodology, surveys and committees are described in the following sections.

Planning Methodology

We used a simple approach to determine the planning methodology. There were six basic questions that needed to be answered.

- Where are we?
- Where do we want to go?
- How do we get there?
- When will it be done?
- Who will be responsible?
- How much will it cost?

A project team was setup to provide the majority of the work effort on the plan. The team consisted of the following: Gary E. Wenger, Executive Director, Computing and Information Systems; Donna Berliner, Manager, Mainframe Computing; Ed Leninger, Manager, Distributed Computing; and Sandra Geis, Manager, Communications, Systems & Operations.

The Executive Director served as project leader and coordinator of the planning effort.

Surveys

We used three surveys, the Academic Computing Survey, the Administrative Computing Departmental Survey, and the Academic Computing Departmental Survey, as well as individual interviews with each department on campus to report on the academic and administrative computing needs of the institution.

Academic Computing Survey

The Academic Computing Survey was generated to provide faculty with a method of contributing to the plan. The survey provided data on the following areas:

- Priority on the type of computer hardware
- Priority on the type of computer software
- Level of support needed on use of computers
- Level of support provided on the use of computers
- List of most important computing areas
- Incentives needed to use computers

Administrative Computing Departmental Survey

The Administrative Computing Departmental Survey generated responses from each dean/director regarding their departmental administrative computing needs. The Executive Director of Computing and Information Systems and/or the Manager of Distributed Computing, Manager of Mainframe Computing, and support staff from Computing and Information Systems interviewed each dean/director. The survey provided the following information:

- Computer equipment needed to provide adequate support over the next three years
- Projected growth of existing administrative applications
- New computer applications needed to replace manual operations
- Type of support needed by user departments (i.e., training, documentation, micro-computer repair, etc.) received from personnel in Computing and Information Systems.
- Future computer support areas such as graphics, electronic mail, etc.
- Connectivity needs (i.e., the need for information from one computer system to be sent to another system on campus)

Academic Computing Departmental Survey

The Academic Computing Departmental Survey generated feedback from the deans and associate deans of each division. The Executive Director of Computing and Information Systems and/or the Manager of Distributed Computing interviewed each dean, associate and/or assistant dean. The survey provided the following information:

- Current and projected student use of computers in number of students and contact hours
- Faculty use of computers
- Current and future software needs
- Plans for expansion (provided by the divisions responsible for computer labs)
- Computer support from personnel in Computing and Information Systems

- New academic computing applications

The surveys provided precise and accurate information about the current computing on campus, and the future needs for both instructional and administrative areas of the college.

Committees

Four committees focused our view of the college impetus, and contributed suggestions, reviews, and recommendations for the planning process:

- Academic Divisional Computer Committee - ADCC
- Academic Computing Planning and Advisory Committee - ACPAC
- Administrative Systems Users Advisory Committee - ASUAC
- Computing and Information Systems Management Committee - CIMC

Academic Divisional Computer Committee - ADCC

Each academic division identified three to five faculty members involved in computing. These members served on the Academic Divisional Computer Committee to address computing needs. The charge of the committee follows:

- Define divisional computing goals and objectives
- Serve as a nucleus of informed faculty to communicate with other faculty about computing
- Collect information from the division and incorporate the information into a computing plan for the division
- Provide a divisional plan to the ACPAC committee which identifies anticipated and projected new computer use and direction for computing at the divisional level
- Review and prioritize faculty grant proposals relating to computing

Academic Computing Planning and Advisory Committee - ACPAC

The Academic Computing Planning and Advisory Committee consisted of faculty representatives of each academic division, one academic dean, Dean, Learning Resource Center, the Executive Director Computing and Information Systems, and the Manager of Distributed Computing. An academic dean serves as chairperson on a rotating basis. The charge of the committee follows:

- Define academic computing goals and objectives for the college
- Develop policies and procedures
- Review academic computing standards
- Define the current computing environment
- Evaluate computer resources and support

- Provide feedback to the divisional computer committee and other faculty members
- Review and prioritize academic computing project requests
- Review ongoing divisional computing needs
- Evaluate and award computing grants proposals based on funding available
- Review the Academic Computing Plan

Administrative Systems Users Advisory Committee - ASUAC

The Administrative Systems Users Advisory Committee consists of the major computing users and director/dean level representatives from the five administrative units (Central Campus, Open Campus, Administrative Affairs, External Affairs, and Planning and Information) as well as the Executive Director, Manager Mainframe Computing, and Manager Distributed Computing from Computing and Information Systems. The charge of the committee was to:

- Develop policies and procedures related to Administrative Computing.
- Review and prioritize all administrative programming requests
- Provide input from their units on computing needs for hardware, software, and support
- Provide feedback to the administrative units represented
- Provide input on future computing needs
- Evaluate the Administrative Computing Plan
- Monitor the software and support needs

Computing and Information Systems Management Committee - CIMC

The Computing and Information Systems Management Committee consists of the President, Vice President Planning and Information, Vice President Administrative Affairs, Vice President External Affairs, Provost Central Campus, Provost Open Campus, and the Executive Director Computing and Information Systems. The committee was responsible for:

- Reviewing institutional policies and procedures
- Reviewing campus wide standards
- Reviewing the academic planning recommendations
- Reviewing the administrative planning recommendations
- Reviewing the future direction recommendations
- Recommending priorities
- Recommending funding levels to the Board of Trustees

Final funding decisions for the Institutional Plan for Computing are made by the Board of Trustees during its review. Appendix A shows the organization of the planning committees for both the administrative and academic computing planning processes.

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Appendix B shows the current governance structure on computing and Appendix C shows a diagram of the planning process.

RECOMMENDATIONS

Academic Computing

Overview

This section provides information dealing with academic computing. Provided is a definition of academic computing, what are the critical issues that are related to academic computing from a student and faculty perspective, and what are the major goals of academic computing for FY93-95. Also included is the current academic computer usage by each division, projected usage to meet the proposed recommendations and financial costs for FY93-95.

Definition

Academic Computing includes all of those activities which are integral to or related to student instruction in computer-related disciplines, or other instruction which relies on computers. This includes all computing functions which either assist instructors in the development or maintenance of course materials or facilitate students in the learning process, support of student labs, and training of faculty in the use of computers. The following sections define issues, goals and recommendations for academic computing for FY93-95.

Issues

There are a number of specific issues which must be addressed in order to ensure the integration of computers into the curriculum and that computers will have a positive impact on students at the college.

- That faculty have sufficient access to computer resources.
- That students have sufficient access to computer resources.
- That computer hardware and software is maintained and upgraded to keep pace with new computer technology as appropriate.
- That faculty have access to the appropriate computer software to be used for instruction of classroom management.
- That all computer users have a clear understanding of the college's position on the software copyright law.
- That faculty and students receive sufficient support in using computers.
- That staff support personnel keep pace with the growth in the use of appropriate computer technologies.

- That faculty receive support in the identification, development and integration of new applications into the instructional process.
- That faculty are provided with information on new applications or the options they have in selecting a computer system for their students to use.
- That faculty are provided with incentive to effectively integrate the use of computers into instruction.

Goals

The goals of Academic Computing for FY93-95 are:

- To increase student and faculty access to computing technology.
- To support the continued exploration of computing technology in order to enhance the instructional capabilities of the faculty.
- To facilitate the teaching-learning process by providing access to current technology by faculty and students alike.
- To support efforts to provide computer training for faculty.
- To prepare students for the future by acquiring computer literacy.
- To provide critical thinking tools to improve the problem-solving capabilities of students.

The Academic Computing Departmental Survey has provided information necessary to project not only computing needs over the next three years, but also the hardware and software resources required to support those needs. Most of the recommendations will provide solutions to faculty and student issues on campus. This section summarizes the major instructional divisions for Central and Open Campus, and the level of computer usage for these areas as identified from the survey.

Summary of Student Usage

The following figure provides a summary of the projected cumulative growth and percent increase in student computer usage over the next three years for the college as a whole. The numbers are reported on student seat count.

SUMMARY OF COMPUTER USAGE GROWTH PROJECTIONS

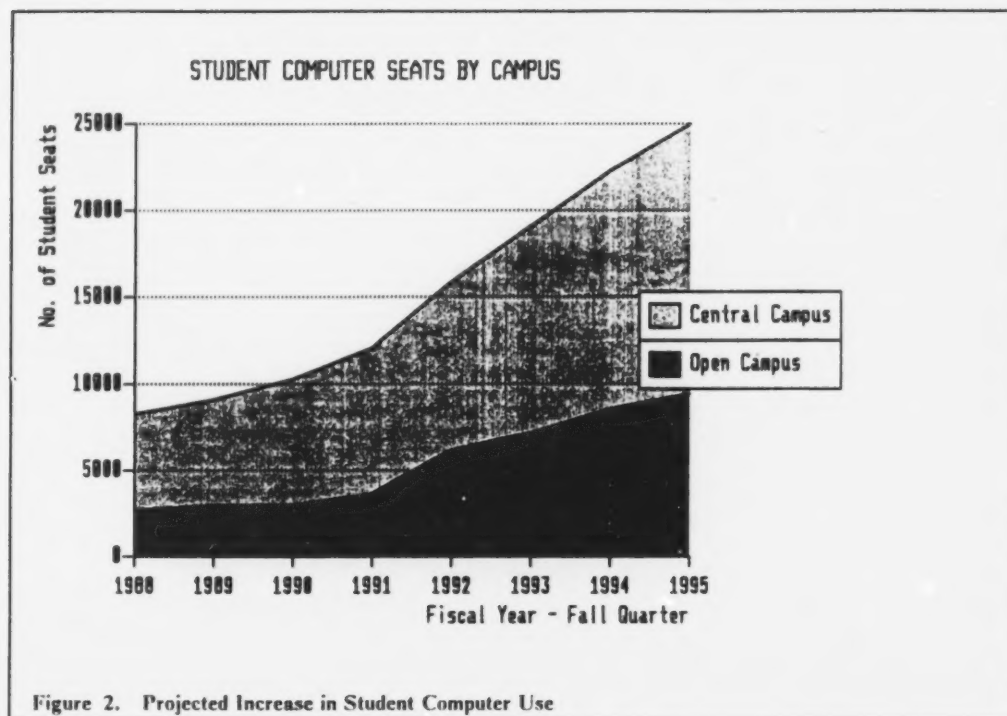
STUDENT SEAT COUNT - FALL

AREA	Actual FY92	Projected FY93	Projected Increase	Projected FY94	Projected Increase	Projected FY95	Projected Increase	Increase FY92-95
Central Campus								
Business & Services (B&S)	4,273	4,943	16%	5,396	23%	5,763	28%	1,490
Communications (COM)	1,245	2,060	65%	2,960	83%	3,830	87%	2,585
Humanities & Liberal Arts (HUM)	70	170	143%	265	115%	445	142%	375
Natural Sciences (NS)	2,063	2,292	11%	2,587	23%	2,924	33%	861
Occupational & Vocational Education	1,273	1,509	19%	1,574	20%	1,599	21%	326
Social & Behavioral Science (SBS)	750	930	24%	970	24%	1,005	26%	255
Central Campus Total	9,674	11,904	23%	13,752	42%	15,566	61%	5,892
Open Campus								
Academic Alternatives (AA)	1,154	1,320	14%	1,471	24%	1,628	32%	474
Business & Professional Inst. (BPI)	449	495	10%	545	19%	608	29%	159
Instructional Affairs (IA)	4,623	5,376	16%	6,543	36%	7,196	39%	2,573
Open Campus Total	6,226	7,191	15%	8,559	37%	9,432	51%	3,206
Institutional Total	15,900	19,095	20%	22,311	40%	24,998	57%	9,098

Figure 1. Projected Increase in Student Computer Use

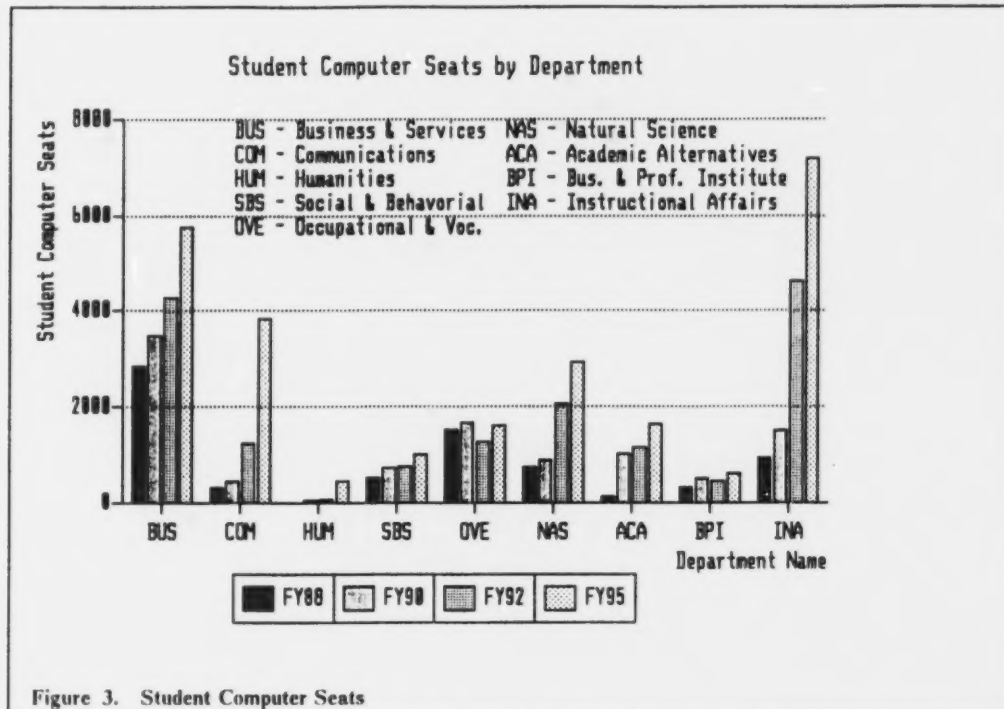
We are projecting a 20 percent increase from fall FY92 to fall FY93 in student enrollment in courses using computers. Central Campus computer usage is expected to increase by 61% or 5,892 students and Open Campus is expected to increase by 51% or 3,206 students over the next three years. The largest increase in number of students using computers is projected for the Communications Division, Business and Services and Instructional Affairs. By fall FY95 we are projecting a 57% increase or 9,098 additional students that will be using computers for course work. This is a 19 percent average yearly increase in student usage institution-wide.

The following figure shows the increase in student usage for FY88 thru FY92 and what is projected for FY93-FY95 for Central and Open Campus.



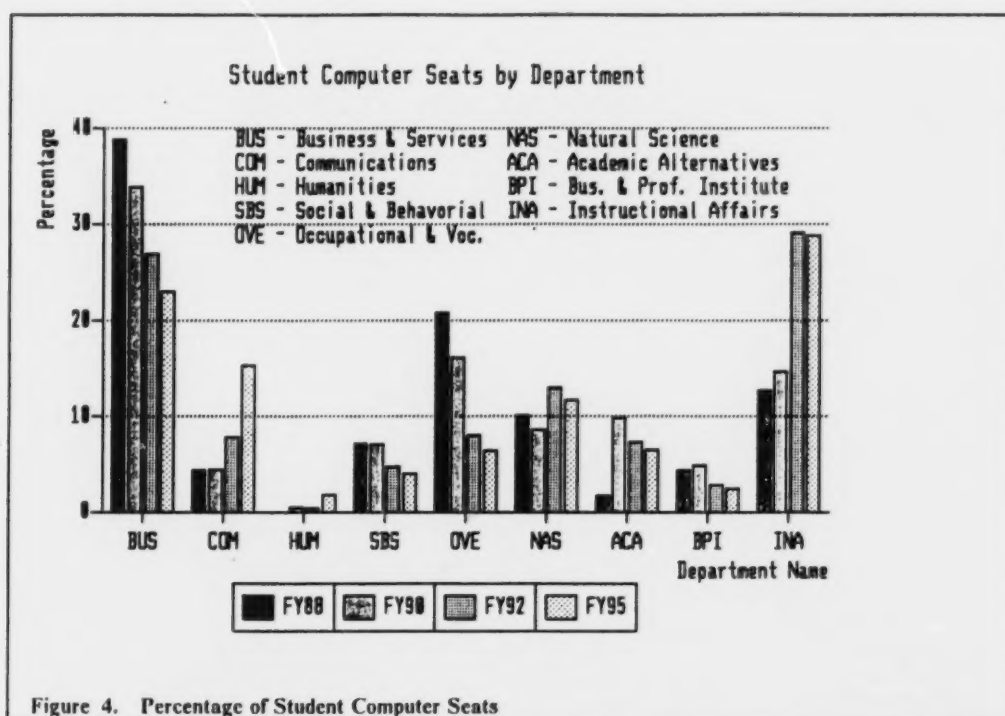
In FY91 we opened the Seaton Computing Center and you can see the large increase in usage for Central Campus. In the summer of FY92 we opened the regional centers and the increase is also dramatic.

The following chart shows the usage by each division for FY88, FY90, FY92 and what is projected for FY95.



Easily apparent are the programs that will use computers more and more in the curriculum. Instructional Affairs will have the most students with Business and Services second and Communications third.

The following chart shows the percentage of student seats in each division that are using computers. You can see Business and Services and Occupational and Vocational Education divisions dominated the number of students in FY88. The shift is toward using computers in all disciplines as demonstrated by the Communications division.



The following figure compares the institutional seat count for all courses vs. courses that use computers for each academic division including projections to FY95.

SUMMARY OF STUDENT SEAT-COUNT VS. STUDENTS USING COMPUTERS								
Area	Actual FY92				Projected FY95			
	Seat Count	Computer Usage	Percent Usage	Percent Total	Seat* Count	Computer Usage	Percent Usage	Percent Total
Central Campus								
Business & Services	10,167	4,273	42%	27%	11,122	5,763	52%	23%
Communications	5,304	1,245	23%	8%	5,797	3,830	66%	15%
Humanities	6,286	70	1%	0%	6,871	445	6%	2%
Natural Sciences	10,374	2,063	20%	13%	11,339	2,924	26%	12%
Occupational & Voc. Education	5,631	1,273	23%	8%	6,155	1,599	26%	6%
Social & Behavioral Science	5,579	750	13%	5%	6,098	1,005	16%	4%
Central Campus Total	43,341	9,674	22%	61%	47,382	15,566	33%	62%
Open Campus								
Academic Alternatives	10,227	1,154	11%	7%	11,178	1,628	15%	7%
Business & Professional Institute	3,185	449	14%	3%	3,481	608	17%	2%
Instructional Affairs	13,091	4,623	35%	29%	14,308	7,196	50%	29%
Open Campus Total	26,503	6,226	23%	39%	28,968	9,432	33%	38%
Institutional Total	69,844	15,900	23%	100%	76,349	24,998	33%	100%

*Projected FY95 seat count calculated at 3% annual growth

Figure 5. Summary of Student Seat-Count vs. Students Using Computers

For the fall FY92 23% of all student seats are using computers in courses. By fall FY95 that number is expected to increase by 9,098 to 24,998 or 33% that are using computers

in a class. Currently Instructional Affairs accounts for the largest number of students with 29%, while Communications will increase from 8% in FY92 to 15% in FY95. Usage within each division will increase by fall FY95 with Communications using the computer in 66% for all their students, Business and Services is second in FY95 with 52%.

The following figure shows the growth of computing compared to the total students at the college.

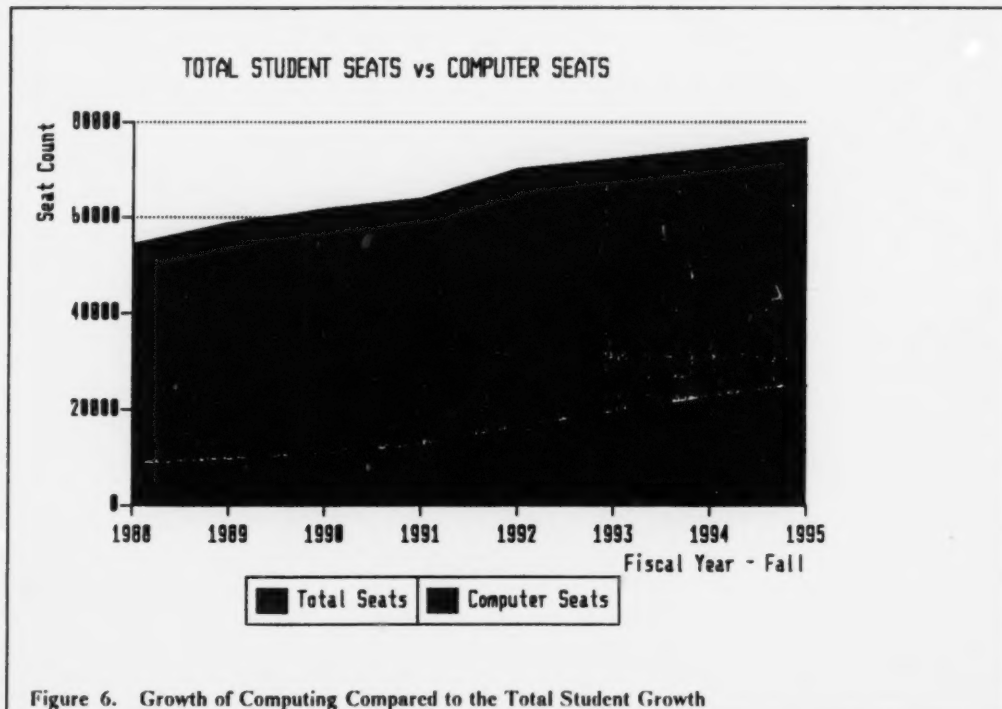


Figure 6. Growth of Computing Compared to the Total Student Growth

The graph shows a history of computer usage from FY88 to projected usage to FY95. In FY88 one in every eight students was using computers. For fall FY92 one in every five students on an average is using computers in the classroom. From FY88 to FY92 the number of students using a computer increased an average of 25% per year. From FY93-FY95 it is projected to grow at 20% per year. By FY95 one in every three students on an average will be using a computer in a class.

Following is a table of actual and projected contact hours for each academic division. The contact hours are the total time students use the computer in an open lab and/or classroom lab on campus for all courses using a computer. The contact hours determine the number of workstations that are needed by students.

SUMMARY OF GROWTH PROJECTIONS FOR ACADEMIC DIVISIONS

AREA	STUDENT CONTACT HOURS - FALL							
	Actual FY92	Projected FY93	Projected Increase	Projected FY94	Projected Increase	Projected FY95	Projected Increase	Increase FY92-FY95
CENTRAL CAMPUS								
Business & Services (BUS)	126,503	159,934	26%	178,325	41%	191,507	51%	65,004
Communications (COM)	40,315	65,395	62%	91,410	127%	117,040	190%	76,725
Humanities (HUM)	350	820	134%	1,250	257%	2,090	497%	1,740
Natural Sciences (NAS)	16,273	17,945	10%	20,260	25%	22,965	41%	6,692
Occupational & Voc. Ed. (OVE)	42,031	47,545	13%	49,245	17%	49,731	18%	7,700
Social & Behavioral Science (SBS)	11,450	13,450	17%	13,930	22%	14,350	25%	2,900
Central Campus Total	236,922	305,089	29%	354,420	50%	397,683	68%	160,761
OPEN CAMPUS								
Academic Alternatives (ACA)	9,255	10,278	11%	11,150	20%	12,097	31%	2,842
Business & Professional Institute (BPI)	4,854	5,364	11%	5,928	22%	6,612	36%	1,758
Instructional Affairs (INA)	57,476	69,185	20%	90,153	57%	102,969	79%	45,493
Open Campus Total	71,585	84,827	18%	107,231	50%	121,678	70%	50,093
Institutional Total	308,507	389,915	26%	461,650	50%	519,360	68%	210,854

Figure 7. Summary of Growth Projections-Contact Hours for Academic Divisions

The contact hours differ from division to division because some courses require more contact time than other courses. We are projecting an increase of 68% or 210,884 computer contact hours by FY95.

The following chart shows the average computer contact hours per quarter for all courses using a computer by each division. Occupational and Vocational has the largest use, an average of 33 hours per student, while Humanities is the smallest with 5 hours.

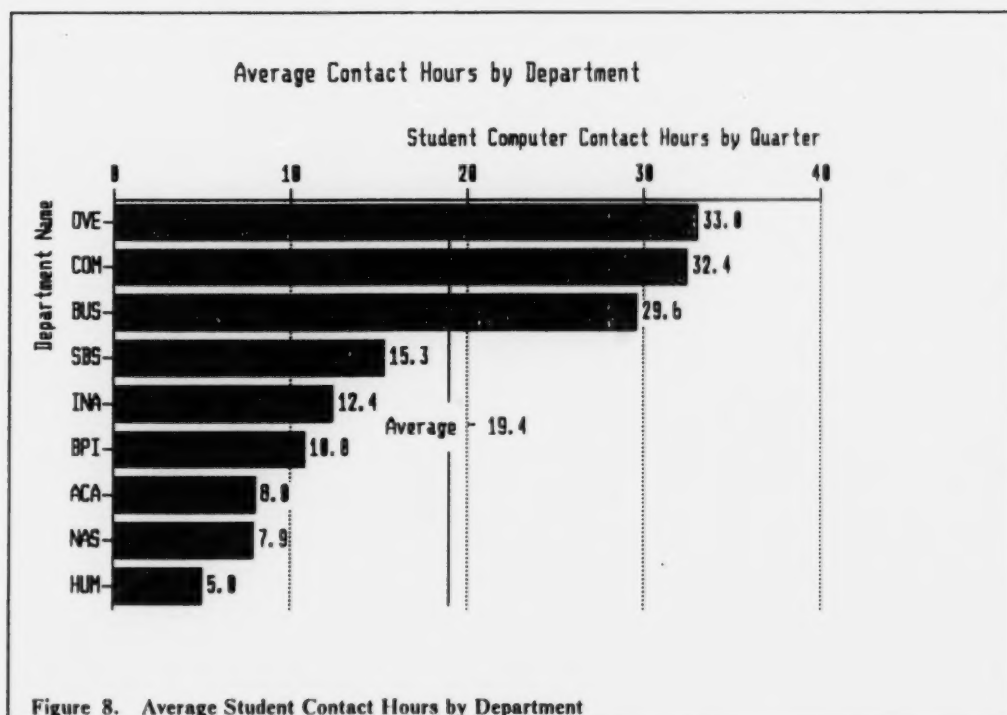


Figure 8. Average Student Contact Hours by Department

The average contact time per student in a computer-based course is 19.4 hours per quarter.

A general purpose open lab is effectively available 70 hours per week or 770 hours per quarter. By using the 19.4 contact hours per student, we can determine that one workstation can support about 40 additional student seats per quarter.

The following table shows the projected workstations needed for all cross discipline labs on campus based on student contact hours. The cross discipline labs include the Seaton Computing Center, the regional centers and K123 lab in Open Campus. We reviewed the current utilization of each of these labs and determined when additional classrooms and open lab workstations would be needed based on the growth. For a detailed explanation please see the Institutional Plan for Computing, Academic Computing section.

<i>PROJECTED WORKSTATIONS - FY93-95</i>				
<i>Workstation Type</i>	<i>FY93</i>	<i>FY94</i>	<i>FY95</i>	<i>Total</i>
IBM	70	115	103	288
Macintosh	4	0	4	8
<u>CADD</u>	<u>5</u>	<u>1</u>	<u>0</u>	<u>6</u>
Total Workstations	79	116	107	302

Figure 9. Projected Workstation Needs

We will need 302 additional workstations in FY93-95 with 79 in FY93, 116 in FY94 and 107 in FY95. Two additional classroom labs will be needed each fiscal year with the remaining workstations for open labs. The 302 additional workstations only address the cross discipline labs; this does not address the dedicated labs. The dedicated labs are the responsibility of each division.

Summary Recommendations

The following section provides a summary of the recommendations for Academic Computing. The recommendations define the strategic direction and resources necessary to meet the goals of academic computing while satisfying the student growth in the use of computers from FY93-95. The resources are divided into hardware, software and support.

Hardware & Software

The following recommendations provide the hardware and software to meet the growth in student and faculty computing for the next three years.

- Student

- **Replace computer labs in K123 in K Building in FY93.**

Currently K123 in K Building has 50 IBM PC workstations for student use. The workstations need to be upgraded to use the most current software and networked for easy software distribution. We are recommending the lab be upgraded in FY93 at an estimated cost of \$200,000.

- **Provide computer lab for Communications Division in FY93.**

The communications division has had tremendous growth and is projecting a 100 percent increase in their computer usage by FY95. We are recommending a 30 workstation computer lab in FY93. As an interim solution until the additional space can be provided, we recommend moving the workstations from K123 to central campus where a communications lab may be setup and networked with the Seaton Computing Center. This will cost \$15,000.

- **Provide additional workstations for Business & Services in FY93.**

We are recommending moving 20 workstations from K123 to the Office Careers lab in the IC building in FY93. These units would be used to provide interim workstations until new units can be purchased in future years.

- **Expand LRC with Macintosh systems in FY93.**

Currently the LRC lab has only two Macintosh systems for student use. We are recommending adding two Macintosh systems to the lab in FY93. The estimated budget is \$7,000.

- **Upgrade LRC computer workroom in FY93.**

The LRC computer workroom contains 22 IBM PS/2 workstations. Each workstation needs to be upgraded with additional memory and a mouse device. The upgrade will allow the workstations to use current and future application software at a cost of \$10,000.

- **Investigate mainframe student applications vs. microcomputer based systems in FY93.**

Today several Computer Information Systems courses use the mainframe computer to teach instruction. Several systems exist that allow student mainframe systems to use microcomputer-based systems. Because of on-going concerns of security and administration cost, we are recommending that the student mainframe systems be investigated for use on microcomputers in the Seaton Computing Center.

- **Develop computer recycling/replacement program in FY93.**

Currently several labs on campus have older technology which may or may not be suitable for use in the future. We are recommending the development of the plan to recycle/replace systems on campus to provide efficient use of resources.

- **Standardize application and systems software in computing labs in FY93 and FY94.**

When possible, steps should be taken to adopt and promote standards for the various general-use programs such as word processing, database, graphics, communications and operating systems software. We budgeted \$25,000 for FY93 and \$10,000 for FY94 to provide the additional funds to keep up-to-date with the most current academic software in the networked labs.

- **Upgrade Seaton Computing Center in FY93, FY94 and FY95.**

We are recommending increasing the memory in all the workstations in the Seaton Computing Center. This will allow us to use the newer technology software. This will cost \$30,000 for 200 workstations or \$10,000 each year.

- **Monitor system utilization in FY93, FY94 and FY95.**

Each computing lab should be monitored on a quarterly basis to collect usage data on the computer systems. This will provide accurate data on computer usage. We

should continue to determine how long students are in the open labs and classrooms and what courses they are working on.

- **Upgrade LRC CD-ROM network in FY93, FY94 and FY95.**

Currently the LRC provides a CD-ROM network system supporting sixteen databases. The usage of the system continues to grow. We are recommending adding additional servers to provide ten additional databases for FY93-95. The estimated cost is \$4,000 in FY93, \$4,000 in FY94, and \$8,000 in FY95.

- **Expand dedicated labs where needed in FY93, FY94 and FY95.**

Growth in dedicated or individual labs used by divisions, where space is available, should be expanded. The divisions are responsible for budgeting for their own hardware and software for these labs.

- **Provide student open computer labs at regional centers in FY94.**

The growth of computer usage at the regional centers will require additional workstations for students. We are recommending the placement of a new 30 workstation open lab at Naperville and at Westmont in FY94. Each workstation will be connected to the existing network to provide efficient software distribution and support to students. This will cost \$75,000 at each site.

- **Expand testing labs at the regional centers in FY94.**

Currently a testing lab exists at several locations in the district to provide student placement tests for Math and English. We are recommending expansion of the testing labs to Westmont, Naperville, and Lombard in FY94. An estimated \$6,000 is budgeted in FY94.

- **Expand learning labs in FY94.**

Currently a learning lab exists on Central Campus to provide student self-paced courses through Academic Alternatives. Because of the growth of the learning lab, we are recommending the expansion of learning labs on central campus by three workstations and two at each of the regional centers at Naperville, Westmont, Lombard, and Glendale Heights. An estimated \$32,000 is budgeted for the expansion.

- **Expand testing lab on Central Campus in FY94 and FY95.**

Currently the testing lab supports 20 workstations to provide pre-course testing for students. With the growth of the number of students and increased number of tests, we are recommending the testing lab increase by 10 workstations in FY94 and 20 in FY95. We estimate the cost of \$24,000 in FY94 and \$60,000 in FY95.

- **Provide CDI expansion in FY95.**

We are recommending CDI (Computer Digital Interactive) be added to the existing computer LRC lab to provide students access to new technology. CDI provides interactive video applications to be used on a network. The estimated budget is \$10,000 in FY95.

- **Network institutional computing labs**

We are recommending the continued networking of student computer labs on campus. Any labs that can share software should be networked. All of the cross discipline labs will be networked by FY93. Each dedicated lab should be reviewed

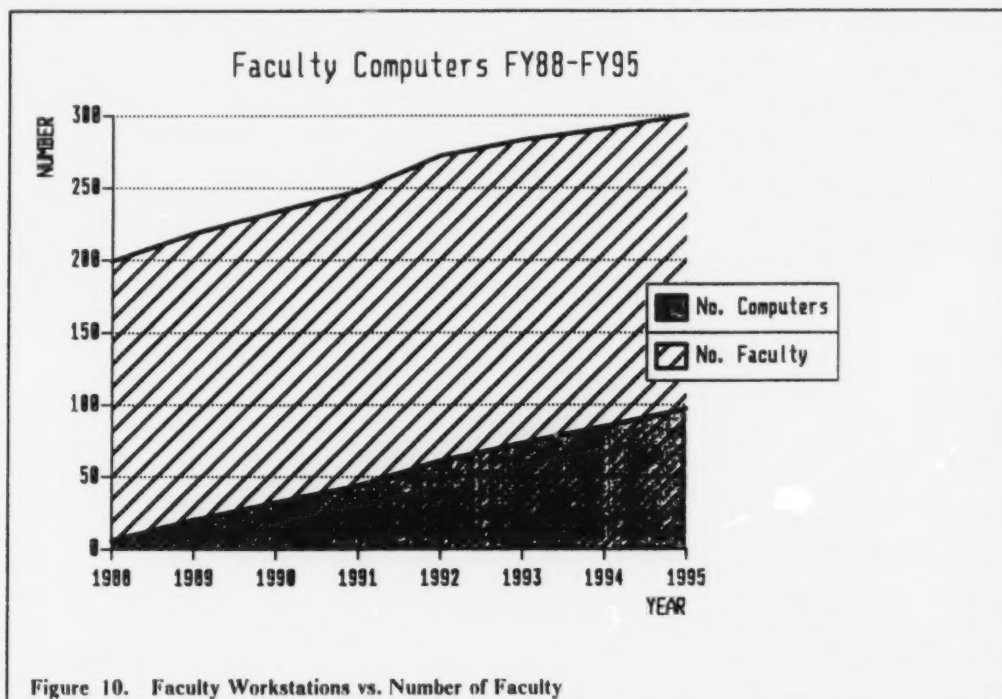
for possible networking. This recommendation is dependent on the campus-wide telecommunications plan.

- **Expand computing labs.**

Student contact hours for computing is projected to grow at a 23 percent annual rate. Additional computing classrooms, open labs, and specialized labs will be needed in order to meet the continuing growth over the next five years. It is recommended that the college add the appropriate space to support 400-500 more workstations. This is an estimated budget of \$2,500,000 for hardware and software. This amount is not included in the budget of this plan.

- Faculty

Faculty access to computer resources has also been evaluated and compared to the number of computers which are needed over the next three years. The following graph shows total number of faculty and numbers of faculty workstations available for faculty use.



Since 1988 faculty use of computers has increased dramatically. By January 1992 all full-time faculty will have access to a microcomputer in their office area. The current faculty to workstation ratio is five to one. This does not provide adequate access for all faculty areas.

The following recommendations will increase faculty access to computers and provide access to the newer technologies of computer use in instruction.

- **Upgrade workstations in faculty office areas in FY93.**

The current usage of the faculty suite workstations has increased significantly over the last four years. Many of the workstations have only one meg of memory and 20-40 megabytes of disk space. Up to six faculty may use each workstation resulting in limited space for programs and data for each faculty member. In addition memory is needed to use some of the new technology software available to faculty. We are recommending 60-80 megabyte disk drives and four meg of memory for each workstation at a cost of \$18,500.

- **Setup an inventory of software for the college in FY93.**

As software is purchased, information will be collected for each item and added to a software database. Instructional areas will be notified of these purchases.

- **Expand faculty work area in M Building in FY93.**

Currently we have one IBM PS/2 workstation available in M building for faculty access. With additional faculty moving to M building, we are recommending the expansion of the M building work area with one Macintosh II and one IBM PS/2 Model 70 and a laser printer. We are budgeting \$12,000 for this equipment.

- **Provide faculty office areas with microcomputers in FY93, FY94 and FY95.**

Continue to provide faculty office areas with microcomputers to be used in support of these activities:

- Preparation of course materials, management of instruction
- Instructor-student consultation concerning computer-related assignments
- Exploration of new applications, development of instructional software
- Networked access to lab software
- Networked communications with other faculty or support staff

Specific requests include the purchase of 36 additional microcomputers and software over the next three years, with 12 systems purchased each year with additional units to be placed in each faculty area. This will provide a faculty/workstation ratio of three to one. The estimated budget is \$36,000 each fiscal year.

- **Provide new workstations for checkout in FY93, FY94 and FY95.**

Currently we have five laptop computers in the library for checkout to faculty. The workstations are not capable of utilizing the newer technology software. We are recommending purchasing three additional units each year for faculty checkout. The estimated budget is \$10,000 for each fiscal year.

- **Provide funding for the purchase/investigation of new computer hardware technologies in FY93, FY94 and FY95.**

A Hardware Grant Program was created in 1988 to assist faculty in the investigation of new technologies. We need continued funding to meet faculty demand for new instructional/informational delivery systems (i.e., ROM Disk, interactive video, graphics). Funding of these projects are granted by a committee after review of the proposal and its impact on the related areas of instruction. A total of \$15,000 is recommended for this program for FY93, FY94 and FY95.

- **Expand the faculty work area to include multimedia capabilities in FY93, FY94 and FY95.**

The faculty work areas consist of two IBM model 70 and two Macintosh II workstations in the Seaton Computing Center and one IBM Model 70 in M building. Each faculty work area should be upgraded to include multimedia capabilities. A total of \$60,000 is recommended for this expansion with \$20,000 in each fiscal year.

- **Provide networking to all faculty suite workstations in FY94.**

A network will allow faculty to access the Seaton Computing Center, IBM mainframe and library system and to communicate with students (and students to communicate with faculty) in any of the networked labs. All faculty counseling areas need access to the mainframe to provide information to assist in student counseling. This will require interface cards for each workstation. The networking of faculty suites is recommended in FY94 at a cost of \$30,000. This recommendation is dependent on the campus-wide cabling system.

- **Continue to provide funding for the purchase/investigation of new academic software applications in FY93.**

We are recommending an additional \$5,000 be included in the software program for faculty. This is currently provided in Computing and Information Systems operating budget. This will increase the budget to \$40,000 per year.

The funds can be used to provide faculty software for the following:

- New instructional/informational delivery systems.
- Software development tools, such as application software, authoring systems and programming languages.
- Specific software programs to be made available to all faculty as an aid to the management of instruction.

- **Involve more faculty in the search for instructional applications.**

Leadership is needed in organizing those activities which promote the search for new applications. This includes those steps involved in identifying and integrating software into instruction. These may include:

- Evaluation and development into the curriculum
- Selection and preview of software
- Review of software purchases
- Integration of software into instruction
- Integration of software into lab facilities and preparation of student support materials

Because faculty involvement is essential for the identification and evaluation of instructional applications, incentives need to be provided which will encourage them to take an active role in the process. Some incentives include release-time, summer pay, the possibilities of royalties, funding of research and development, projects and peer recognition for individual achievement.

Support

The following recommendations define the levels of support needed to meet the student and faculty increases in computer use.

- Student

Based on projected increases in student usage and assuming that over the next three years the current level of student support will be maintained, we have projected additional personnel will be needed for the next three years. The recommendations follow:

- **Additional support for the Seaton Computing Center in FY93.**

The Seaton Computing Center came online fall 1990. The center has increased the operational hours in order to meet the demands of the class schedules. Currently the hours open exceeds the hours available by supervisor staff. We are recommending a twenty hour per week lab supervisor to provide lab-aide supervision and security to the building.

- **Provide part-time students support for the communications computing lab in FY93.**

With the added computing labs additional part-time students will be needed to provide support for the communications lab.

- **Establish a student support network.**

Part of the computing knowledge network referenced in the faculty support section can be devoted to the support of student computer use. Each class can have access to an information account on the network which allows for communication with faculty, lab support staff and other Academic/Administrative areas of the college. The student support network will improve communication between present areas of support and the increasing number of students using computers. This recommendation is dependent on the campus-wide telecommunications plan.

- Faculty

As stated earlier, faculty are using computers more and more each year. The following recommendations are necessary to maintain the same level of support.

- **Provide additional faculty consulting support in FY93 and FY95.**

The use of computers by faculty is growing at a very high rate. As faculty have access to more workstations each year, they need to be supported in answering their technical questions and their use of new technologies. It is important to respond to faculty in a timely manner. We are recommending two positions, Senior Academic Analyst in FY93 and a Senior Academic Analyst in FY95.

- **Continue staff development and computer training.**

Depending on their level of expertise, faculty should continue to increase their knowledge of computers. Below is a hierarchy of the different levels of computer literacy.

Level 1 - Knowledge of the operation and parts of the computer. Exposure to general-purpose applications.

Level 2 - Use of computers regularly for professional use.

Level 3 - Use of computers in existing curriculum.

Level 4 - Reassessment of curricular goals and investigation of new technologies.

The last two levels have the greatest impact on the use of computers in instruction. The last two levels cannot be attained until the first two levels of literacy are achieved. It is recommended that staff development and computer training activities continue to promote computer literacy at the college. Faculty need to be encouraged to attend these workshops. Faculty at the fourth level add to the colleges computer knowledge resource. This knowledge base can also be increased by funding faculty trips to other colleges and computer hardware and software seminars. The faculty development program should continue over the next three years.

We are recommending developing additional training courses utilizing new technology used in instruction. These include multi-media and critical thinking software.

- **Provide computer training to faculty for credit.**

A training program should be set up to provide faculty with the necessary incentives to use the computer for class management, class preparation and instructional support in the curriculum. Faculty should be encouraged to participate and assist in their support training. This can be accomplished by providing credit to the faculty enrolled in the workshops and release time for the faculty with the desire to assist in teaching workshops to other faculty. The continued support will be provided by Computing and Information Systems.

- **Organize and distribute documentation.**

It is essential to provide high quality documents which aid faculty in using computer resources and provide information that help in the investigation of new applications. This includes an index of computer hardware, software and computer expertise; lists of manuals and documents and where to find them; information about existing systems and applications; information about software resources; minutes of committee meetings and new projects that are currently in progress. It is recommended that a faculty guide to the college's computing resources be compiled and distributed.

Financial Considerations

The following figure provides a breakdown of the computing costs of Academic Computing by fiscal year. The capital amounts are one-time funds. The operating amounts are the recurring cost of supporting the equipment and software each year.

ACADEMIC COMPUTING						
Item	FY93		FY94		FY95	
	Budget Capital	Estimate Operating	Budget Capital	Estimate Operating	Budget Capital	Estimate Operating
Hardware						
Student Resources						
Student Computer Labs						
IBM PS/2-(50) K123	\$100,000	3,000				
Printers-(12) K123	4,000	120				
Network-K123	70,000	2,100				
Furniture-K123	35,000	1,050				
Communications Lab	15,000	450				
Memory Seaton Center	10,000	300	10,000	300	10,000	300
LRC Computer Labs						
PC Memory/Mice Upgrade	10,000	300				
CD-ROM Expansion	4,000	120	4,000	120	8,000	240
CDI Expansion					10,000	300
Macintosh II (2)	7,000	210				
Regional Center Labs						
IBM PS/2-(30) Naperville			\$60,000	\$1,800		
Printers-(7) Naperville			3,000	90		
Network-Naperville			12,000	360		
IBM PS/2-(30) Westmont			60,000	1,800		
Printers-(7) Westmont			3,000	90		
Network-Westmont			12,000	360		
Testing Computer Labs						
IBM PS/2-(1) Naperville			2,000	60		
IBM PS/2-(1) Westmont			2,000	60		
IBM PS/2-(1) Lombard			2,000	60		
IBM PS/2-(10) Central Campus			20,000	600		
IBM PS/2-(20) Central Campus					40,000	1,200
Network Upgrade Central Campus			4,000	120	15,000	450
Learning Computer Lab						
IBM PS/2-(2) Naperville			4,000	120		
IBM PS/2-(2) Westmont			4,000	120		
IBM PS/2-(2) Glendale Heights			4,000	120		
IBM PS/2-(2) Lombard			4,000	120		
IBM PS/2-(3) Central Campus			6,000	180		
HP Laser Printers-(5)			10,000	300		
Faculty Resources						
Faculty Work Area						
IBM PS/2-(1) M Building	5,000	150				
HP Laser Printer M Building	2,000	60				
Macintosh II-(1) M Building	5,000	150				
MultiMedia Upgrade	20,000	600	20,000	600	20,000	900
Faculty Grants						
Suite Computer Grant	36,000	1,080	36,000	1,080	36,000	1,080
Hardware Grant	15,000	450	15,000	450	15,000	450
Software Grants		5,000				
Network Faculty Areas			30,000	900		
Faculty Suite Upgrade	18,500	555				
Laptop Computers	10,000	300	10,000	300	10,000	300
Software						
Lab Software		25,000		10,000		
Total-Academic*	\$366,500	\$40,995	\$337,000	\$20,110	\$164,000	\$5,220
*Staffing support not included in total.						

Figure 11. Academic Computing Budget Summarized

The total capital amount requested for Academic Computing is \$867,500 for FY93-FY95. This is \$366,500 in FY93, \$337,00 in FY94 and \$164,000 in FY95. The operating budget will need to increase by \$40,995 in FY93, \$20,110 in FY94 and \$5,220 in FY95 to provide continuing support for the capital items.

Administrative Computing

Overview

The complexity of the operation of the College of DuPage today requires automation to meet the internal and external reporting needs and the day-to-day operational needs. Most applications today are online. This provides users with immediate access to data stored on the computer for query or for reporting.

In the Administrative Computing section we provide a definition of what is administrative computing, what are the critical issues, the goals, recommendations for each major system and any new initiatives and costs for FY93-95.

Definition

Administrative computing includes all the information processing services which provide the college management and staff the data necessary to make decisions, record data, and carry out the day-to-day operations. The major administrative functions/applications include payroll, personnel, general ledger, accounts payable, accounts receivable, purchasing, student registration and records, financial aid, inventory, word processing, and management information system.

Issues

There are several issues pertaining to administrative computing that must be addressed to provide an acceptable level of service and support.

- Provide users adequate online response time, i.e., quick access to data
- Provide users with adequate disk space to store their data now and for the future
- Provide users with a security system to maintain the integrity of the data
- Provide users applications that are flexible and easy to maintain and modify
- Provide users applications that are accurate
- Provide users the tools to access their data and generate their own reports and analysis
- Provide users download capabilities to allow data stored on the mainframe to be transferred to departmental computers
- Provide users consulting support for their applications and systems
- Provide users with training on how to use an application
- Provide users with user documentation for ease of use
- Provide users with flexible operational hours
- Provide technical expertise to evaluate current and future applications

There are many other issues that affect administrative computing on campus.

Goals

The goals of Administrative Computing are:

- To provide highest level of quality service support to all users.
- To provide fast, effective and efficient service to all users.
- To provide quality training to all users, faculty, and staff.
- To provide consulting support on the current technology available applicable to the user area.
- To maintain a strategy utilizing technology to keep the college in the mainstream.
- To provide computing recommendations that are in the best interest of the institution and the users needs.
- To be knowledgeable about current technology to effectively provide all users with the appropriate information for decision making.

Summary Recommendations

The following section provides a summary of the recommendations for Administrative Computing. The recommendations are divided into software administrative applications and support needs.

Administrative Software Applications

The following recommendations will support the current administrative software applications and the new applications that are needed for the future. Please refer to the Administrative Computing section of the Institutional Plan for Computing for more detail on each system recommendation.

- **Provide student tracking system in FY93.**

We are recommending the purchase and/or development of a student tracking system which allows longitudinal data to be collected on students. The estimated budget is \$20,000 in FY93.

- **Provide a space utilization/classroom scheduling system in FY93.**

As space on campus becomes limited, efficient management of classroom space becomes more important. We are recommending the purchase of a classroom scheduling/space utilization system to improve the management of space. This system is estimated at \$50,000 in FY93.

- **Provide counseling scheduling system in FY93.**

We are recommending developing a counseling scheduling system to provide students a faster method of scheduling appointments with college counselors. The system will be developed in-house by staff and by consulting funds available in the Computing and Information Systems operating budget. The estimated cost is \$30,000.

- **Replace scanning system in FY93.**

The current scanner system is 12 years old and is very expensive to maintain. We feel a newer model scanner based on a PC will meet our needs. The budget for the scanner is \$30,000. We feel a new scanner has a payback period of 3 years. We are recommending to process under the college's risk fund.

- **Expand the library system in FY93, FY94 and FY95.**

We are recommending the library system be expanded to provide printing, additional terminals and ports each year. In FY93 and FY94 we are recommending three terminals each year. Because of the LRC addition, five additional terminals and a CPU upgrade will be needed to meet student demand. The estimated budget is \$13,000 in FY93, \$9,000 in FY94, and \$80,000 in FY95.

- **Update existing mainframe applications in FY93, FY94 and FY95.**

We recommend the following mainframe applications be updated with the most current release; Financial System in FY93 and FY95, Degree Audit in FY94, and Human Resource System in FY95.

- **Purchase computer equipment for new employees in FY93, FY94 and FY95.**

Each year new employees are hired at the college to provide additional support for the user department. Many of the new employees require a computer to perform their job. In the past funds were not set aside for this purpose resulting in less productivity for employees needing a computer immediately on employment. We are recommending purchasing computer equipment for new employees needing a system. We budgeted \$10,000 for four systems in each year to fund this request.

- **Provide inplant management information system for Business and Professional Institute in FY94.**

We are recommending the internal development of an Inplant Management Information System for Business and Professional Institute that will integrate with the existing student billing and financial systems.

- **Provide a job matching system in FY94**

We are recommending a job matching system be acquired to provide Career Planning and Placement a system to assist students in matching qualifications with job availability. A donation of a system has been identified.

- **Expand automated voice response system in FY94.**

We are recommending expanding the current 16 line voice response system from 16 to 32 ports. This will provide additional functions while providing additional accesses for student touch tone registration. The estimated budget is \$30,000.

- **Provide a campus information system in FY94 and FY95.**

We are recommending the purchase of a campus information system in FY94 to provide information access to students, faculty and staff. The system will provide generalized access to campus events and activities, phone directory for faculty and staff, employee benefit information, athletic scheduling, course descriptions, and/or other beneficial information. The access devices may be touch screen and/or keyboard entry. Kiosks should be located at various locations on campus. We are recommending \$20,000 in FY94 and FY95. Implementation is limited until the campus-wide cabling system is completed.

- **Provide an imaging system for Human Resource office in FY95.**

We are recommending the purchase of a LAN based imaging system in FY95. The imaging system will provide an efficient method of storing personnel file information for the Human Resource office. Since imaging is becoming a cost-effective system for document storage and access, the Human Resource office will serve as a pilot project for imaging at the institution. The estimated budget is \$90,000. Campus-wide implementation is limited until the campus-wide cabling system is completed.

- **Provide LAN-based office system in FY95.**

We recommend the development/acquisition of a standardized office system that can be used campus-wide. The system should provide electronic mail, calendaring, scheduling, bulletin boards, and databases. The estimated budget is \$30,000. This project is dependent on a campus-wide cabling system.

- **Provide access to information for faculty and staff.**

Continue to acquire products and services to provide faculty and staff easy access to necessary information to perform their job functions. This includes access to the databases on the mainframe and local area networks and to allow downloading of information to users' personal computers. This recommendation cannot be completed until the campus-wide cabling system is complete.

- **Decentralization of Administrative applications.**

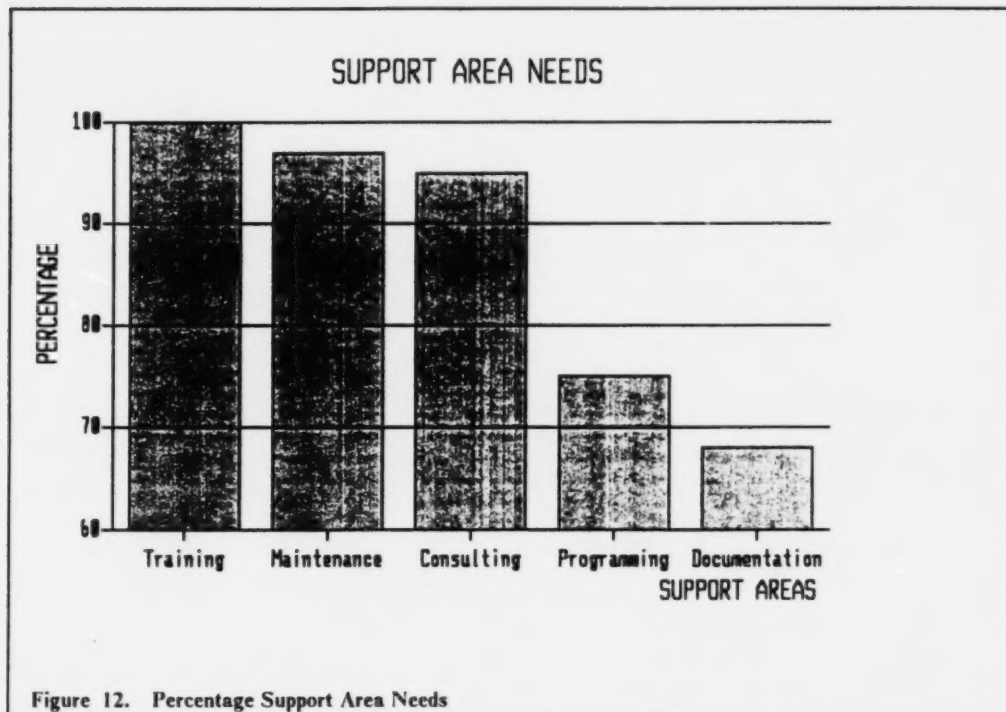
We are recommending moving in a direction to decentralize administrative applications from the mainframe to LAN based systems where appropriate. This approach will reduce costs and allow easier campus-wide access to information while supporting the applications of the future.

- **Encourage use of reporting tools.**

Encourage use of end user reporting tools through services and training sessions to reduce staff support.

Support

Computing support is provided for several areas of the college. There are five basic areas of support that are needed: training, programming, documentation, consulting and hardware repair. The figures below show a percentage breakdown for each support area for the user departments. Training and equipment repair was requested the most by the departments.



The following recommendations will provide the computer support necessary on campus:

- **Provide a Programmer Analyst in FY93.**

A new Programmer Analyst position is needed to provide additional help to meet the increased programming needs of the user departments. This position is requested by FY93.

- **Provide LAN Coordinator position in FY93**

We are recommending a LAN Coordinator position to provide support for all the local area networks on campus. As we continue to add networks the need for additional support will be required.

- **Provide additional microcomputer maintenance position for user departments in FY94.**

Each year user departments continue to purchase microcomputers. In the last three years we have provided onsite service in-house to the user departments. In order to continue to provide an adequate level of service we are recommending a full-time Micro Technician be added in FY94.

- **Provide additional PC training and consulting support in FY95.**

We are recommending an additional Information Center Analyst in FY95 to meet the continuing need for user department support for microcomputers.

- **Develop program/user workshops on computing.**

Develop program/user workshops on computing as to what is happening today, how computing can be used effectively in a given department. Many current and

potential computer users are not aware of what is available. Regular seminars will help eliminate this information gap and allow users to ask the right questions.

- **Incorporate computers into simple activities.**

Incorporate computers into simple activities. Activities that should be promoted include wide use of electronic mail for simple messages, calendaring facilities, and administrative schedules.

- **Use the computers that currently exist on campus to improve productivity.**

Effectively utilize computers into daily activities. Such activities should include downloading data from the mainframe system into microcomputers for analysis and reporting, effective and wider use of word processing, and incorporating graphics for reporting and presentation.

Financial Considerations

The following figure provides a breakdown of the computing costs for Administrative Computing by fiscal year. The capital amounts are one-time funds. The operating budget shows the ongoing cost of supporting the capital equipment and software.

ADMINISTRATIVE COMPUTING						
Item	FY93		FY94		FY95	
	Budget	Estimate	Budget	Estimate	Budget	Estimate
	Capital	Operating	Capital	Operating	Capital	Operating
Administrative Systems						
Library System						
Terminals/Ports-(3)	\$9,000	\$900	9,000	900		
Terminals/Ports-(5)					\$15,000	\$1,500
CPU Expansion					50,000	5,000
Printing	4,000	400				
Touch-Tone Expansion			30,000	900		
Imaging System-Human Resources					90,000	9,000
Facility Scheduling System	50,000	5,000				
Student Tracking System	20,000					
Campus Information System			20,000	600	20,000	600
LAN Based Office System					30,000	1,000
New Employee Setup	10,000	300	10,000	300	10,000	300
Total-Administrative*	\$93,000	\$6,600	\$69,000	\$2,700	\$215,000	\$12,400
*Staffing support not included in total.						

Figure 13. Administrative Computing Budget Summarized

The total requested amount for administrative computing is \$377,000 for FY93-FY95. This is \$93,000 for FY93, \$69,000 for FY94 and \$215,000 for FY95. The operating budget will need to increase by \$6,600 in FY93, \$2,700 in FY94 and \$12,400 in FY95 to provide the continuing support for the equipment and software.

Central Computing & Communications

Overview

The Central Computing and Communications section provides a definition of Central Computing and Communications, defines the critical issues and goals and provides the recommendations and costs to meet the college requirement for FY93-95.

Definition

Central Computing and Communications consists of all the support and resources for mainframe system hardware, software and campus-wide networking for administrative and academic computing.

Issues

A number of issues relating to Central Computing need to be addressed in order to provide the most cost effective solution to computing. The institution must be prepared to:

- Use technology to get the most out of system resources.
- Provide system hardware and system software solutions that will support user applications into the future.
- Analyze current procedures and recommend more efficient methodologies for using current resources.
- Maximize system access to all students, faculty, and staff.
- Make sure resources are readily available to users.
- Provide easy to use systems through software applications, documentation, and training.
- Provide easier to use support procedures to allow fast responses to user problems.
- Respond to user priorities - define what is important to them as a group.
- Provide quality service to all students, faculty, and staff.

Goals

The following are the Central Computing goals:

- To provide a stable on-line computer environment.
- To maintain data integrity of all system and user databases.
- To provide an up-to-date operating environment.
- To provide quality production services to all users equally.
- To provide less than one second online user response time.

Summary Recommendations

The following section provides a summary of the recommendations for Central Computing and Communications. The section is divided into system software, operations, hardware and communications recommendations.

Software

The following recommendations provide a direction for mainframe operating system software:

- **Upgrade the VM/ESA, VSE/ESA, and MUSIC operating systems.**

The operating system environment of VM/ESA, VSE/ESA and MUSIC should be upgraded to meet the future system requirements. This will require VM/ESA release 1.0 to be upgraded to VM/ESA release 1.1. The VSE/ESA and MUSIC systems should be upgraded to the most current versions as they are announced. Each of these upgrades will require additional resources. Please refer to hardware needs for additional costs relating to disk space.

Operations

The operations needs of Computing and Information Systems include those items relating to the space requirements for staffing support, computer room space for the placement of the additional computer equipment, storage of computer equipment and filing, and the staffing for computer operations for the central facility.

- **Expand hours of computer operations in FY93.**

In FY93, expand the part-time computer operator position to full-time operator or add one part-time operator to allow for the flexibility of peak periods of production and computer operator coverage at a cost of \$10,000 per year.

- **Provide additional space for Computing and Information Systems in FY93 and FY95.**

Additional office space will be needed for the Computing and Information Systems staff recommendations in FY93-FY95.

Hardware

Mainframe computer equipment needs are based on the growth of existing applications and new applications that are to be purchased or developed. This growth results by adding terminals and printers to the system and expanding capabilities of existing applications and adding new administrative systems. In situations where the growth exceeds the capacity, the equipment must be expanded. If the equipment cannot perform certain necessary functions, even with upgrading, then the equipment must be replaced. Mainframe computer equipment on the IBM system can be defined by seven major components: *disk capacity, channels, communications, CPU memory, CPU power in MIPS, tape drives, and printing*. In the following sections we will identify the hardware component needs for the next three years. The areas that need to be addressed over the next three years are *disk capacity, tape drives and ports*.

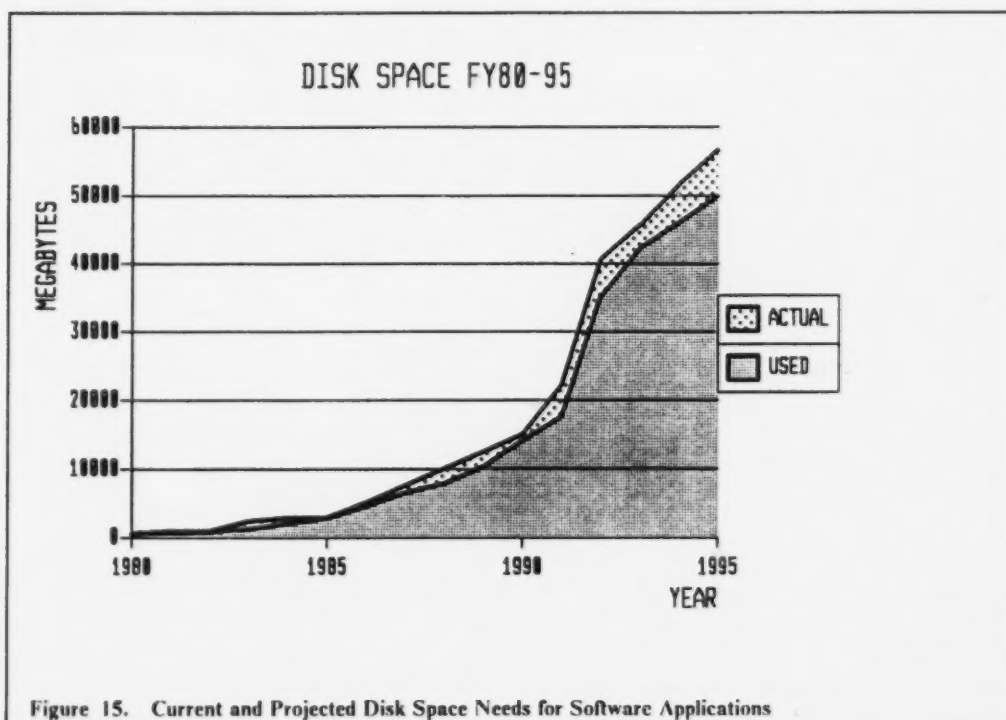
- Disk Capacity

A summary of the disk space used by the current systems together with the new applications follows:

SUMMARY DISK SPACE REQUIREMENTS				
<u>Applications</u>	<u>FY92</u>	<u>FY93</u>	<u>FY94</u>	<u>FY95</u>
Current Administrative Applications	17,578.0	1,997.0	2,355.0	2,765.0
New Applications	0.0	8,950.0	1,030.0	425.0
Systems Software	17,473.0	-3,867.0	449.0	707.0
Total Megabytes	35,051.0	7,080.0	3,834.0	3,897.0

Figure 14. Summary Disk Space Requirements

We are projecting increased disk space usage on the mainframe by 7,080.0 megabytes in FY93, 3,834.0 megabytes in FY94 and 3,897.0 in FY95 to meet the current and new administrative application system software needs. The following figure shows the history of disk space since 1980 with total available vs. total used with the estimated projections based on the above figure.



The following recommendations will provide the necessary hardware to support the predicted application growth:

- Expand solid state disk unit in FY93.

We are recommending adding additional memory to the solid state disk unit to maintain less than one second response time on the mainframe for user applications. The estimated budget is \$15,000.

- **Expand and upgrade disk space to support future and current applications in FY93, FY94 and FY95.**

Provide additional disk space for the data growth identified by the software systems. Two IBM 3880 disk drives will be needed in each fiscal year for an estimated budget of \$11,200 in FY93, \$20,000 in FY94 and \$10,000 in FY95.

- **Expand disk control units and channels for expanded disk space requirements in FY93 and FY95.**

We are recommending the purchase of one additional IBM 3990 disk control unit in FY93 to support the additional disk drives mentioned above. This unit will cost \$35,000. Two IBM 3990 disk control units and eight channels are also being recommended to position us for replacing the disk drives in FY95. We are estimating the control unit at \$40,000 and the channels at \$50,000 in FY95.

- Tape Drives

Currently our magnetic tape backups are performed on six IBM 3480 cartridge drives. The time spent per job could be reduced by adding the tape compression feature to the cartridge system.

- **Upgrade the current IBM 3480 cartridge system controller and tape drives in FY95.**

We are recommending upgrading the 3480 cartridge system controller to add the data compression feature which would decrease system production time. The feature will cost \$15,000 in FY95

- Communications and Networking

Communications and networking provides the highways to connect the user terminals and personal computers to access information from the various administrative systems. Without the connectivity users have no access to information. There are many users, i.e. faculty and staff, that currently do not have access to information systems on campus. The following recommendations provide a direction for integrating computer systems on campus and identify the hardware necessary to access the campus-wide information systems.

- **Expand dialup access in FY93.**

Expand the IBM 7171 from forty-eight to sixty-four ports to provide regional center dial-up access to the mainframe computer systems. The estimated cost is \$10,000.

- **Provide access to a state-wide network in FY93.**

The state of Illinois is setting up a state-wide network to allow colleges, universities, primary and secondary schools, libraries and businesses to communicate. We are recommending connecting the college to the state-wide network at an estimated cost of \$10,000.

- **Expand terminal access in FY93 and FY94.**

Provide two 3174 controllers, one in FY93 and one in FY94 to provide sixty-four additional ports for end user terminals and microcomputers. The two controllers are budgeted at \$5,000 each.

- **Provide a campus-wide cabling system.**

A telecommunication committee has developed a report on the college's telecommunication needs. The plan for telecommunications connects central campus, open campus, and the regional centers to provide a telecommunications network that allows connectivity of computer systems and the continuing support of the system. The proposal provides a cabling system that would support voice, video, and data. This will support such applications as computer data systems, telephone systems, interactive video, security video, energy management, card security system, etc. The telecommunication plan provides funding to connect the various systems and local area networks on campus. We recommend moving ahead with the project as soon as possible. There are several recommendations in the plan that are dependent on the campus-wide cabling system.

Financial Considerations

The following figure provides a breakdown of computing costs for Central Computing by fiscal year. The capital amounts are one-time funds. The operating budget is the ongoing cost of supporting the equipment and software.

CENTRAL COMPUTING & COMMUNICATIONS						
Item	FY93		FY94		FY95	
	Budget	Estimate	Budget	Estimate	Budget	Estimate
	Capital	Operating	Capital	Operating	Capital	Operating
Hardware						
Disk Controllers	35,000	4,800			40,000	9,600
Disk Space	11,000	6,000	10,000	6,000	20,000	6,000
Mainframe Channels					50,000	1,000
Terminal Controllers	5,000	300	5,000	300		
Tape Compression					15,000	1,500
Dialup Expansion	10,000	300				
Solid State Expansion	15,000	500				
State Network		10,000				
Total-Central*	\$76,000	\$21,900	\$15,000	\$6,300	\$105,000	\$18,100
*Staffing support not included in total.						

Figure 16. Central Computing Budget Summarized

The total capital amount requested for Central Computing is \$171,000 for FY93-FY95. This is \$76,000 for FY93, \$15,000 for FY94 and \$105,000 for FY95. The operating budget will need to increase by \$11,100 in FY93, \$6,300 in FY94, and \$18,100 in FY95 to provide the necessary support for the hardware and software.

Support Summary

In the plan we have requested several additional positions to provide the level of support we feel we need in computing. Many of the positions deal directly with training the user "how to" while providing the continued consulting support of hardware and software. The following figure shows the current staffing levels with the additional positions requested and where the positions are needed for FY93 through FY95.

COMPUTING AND INFORMATION SYSTEMS ESTIMATED STAFFING LEVEL REQUEST				
<u>Department/New Position</u>	<i>Current</i>	<i>Requested Positions</i>		
	<u>FY92</u>	<u>FY93</u>	<u>FY94</u>	<u>FY95</u>
Office of Director	3	0	0	0
Distributed Computing	14.5	0	0	0
Senior Academic Analyst		1	0	1
Lab Supervisor-Pt		.5	0	0
Microcomputer Technician II		0	1	0
Information Center Analyst		0	0	1
LAN Coordinator		1	0	0
Mainframe Computing	10	0	0	0
Programmer Analyst		1	0	0
Communications, Systems, & Operations	11.5	0	0	0
Senior Network Analyst		0	1	1
Computer Operator-(PT to FT)		.5	0	0
Total No. of Positions	39	4	2	3

Figure 17. Computing and Information Systems Estimated Staffing Level Request

The following new positions are requested:

- **Lab Supervisor** will be responsible for supervising part-time lab employees in the Seaton Computing Center twenty hours per week. The position is requested in FY93 for the extended hours of operation for the Seaton Computing Center.
- **LAN Coordinator** will provide full-time support for local area networks on campus for FY93.
- **Programmer Analyst** position will provide additional help to meet the continuing programming needs of the user departments. This position is requested by FY93.
- **Computer Operator** position will allow Computer Operations to expand production hours by twenty additional hours per week. This position is requested in FY93.
- **Senior Academic Analyst** position in Academic Computing will provide microcomputer support to faculty. This position is requested in FY93 and FY95.
- **Microcomputer Technician II** position will provide full-time support for the repair of microcomputers at the institution. We are requesting the position in FY94.
- **Senior Network Analyst** would provide technical support for the various local area networks and data communication systems on campus for FY94 and one in FY95.
- **Information Center Analyst** will provide support for decision support tools, microcomputers, and end user applications for FY95.

We are requesting four additional positions in FY93, two positions in FY94 and three positions in FY95.

INSTITUTIONAL FINANCIAL CONSIDERATIONS

Summary of Financial Costs

The total requested funds for capital expenditures for FY93 to FY95 is \$1,440,500. In order to provide an adequate level of maintenance to support the capital expenditures, the operating budget will need to increase by \$69,495 in FY93, \$29,110 in FY94 and \$35,720 in FY95. The staff support needs for these items are not included in the operational budget but will be requested in the normal staffing request process. The following figure shows a summary of the financial considerations for academic, administrative, and central computing.

<i>Item</i>	<i>SUMMARY OF COSTS</i>					
	<i>FY93</i>		<i>FY94</i>		<i>FY95</i>	
	<i>Budget Estimate</i>		<i>Budget Estimate</i>		<i>Budget Estimate</i>	
	<i>Capital</i>	<i>Operating</i>	<i>Capital</i>	<i>Operating</i>	<i>Capital</i>	<i>Operating</i>
Academic Computing	\$366,500	\$40,995	\$337,000	\$20,110	\$164,000	\$5,220
Administrative Computing	93,000	6,600	69,000	2,700	215,000	12,400
Central Computing	76,000	21,900	15,000	6,300	105,000	18,100
Total	\$535,500	\$69,495	\$421,000	\$29,110	\$484,000	\$35,720

Figure 18. Summary of Costs

Financial Plan

A financial plan is one of the most important components of a planning effort. Diligent and careful financial planning is important to reduce costs and save money for the institution. This section defines the spending levels for computing over the last four years FY89 - FY91; provides budget estimates for FY92 - FY93; describes the effects of computing on the unit cost per student; and identifies the funding sources to meet the estimated computing expenditures for FY93 - FY95.

Actual Expenditures/Estimated Budgets

The following table shows a comparison of Computing and Information Systems actual expenditures for fiscal years 89, 90, 91; the current budget for FY92; and the estimated budget for FY93, which is the first year of the computing plan. The table includes both expenditures and budgets from Computing and Information Systems operating account 1900 and the current long range computer account 6823.

COMPUTING AND INFORMATION ACTUAL EXPENDITURES/ESTIMATED BUDGET FY89 - FY93					
	Actual Expenditures			Estimated Budget	
	FY89	FY90	FY91	FY92	FY93
Salaries*	\$1,090,310	\$1,175,157	\$1,356,725	\$1,612,788	\$1,709,555
Fringe Benefits	100,615	125,157	165,659	169,602	179,778
Contractual Services	562,384	453,088	604,824	614,960	699,137
Supplies	147,759	153,892	193,442	215,616	226,396
Conference & Meeting	28,893	25,494	29,033	32,836	32,836
Fixed Charges	356,723	219,304	161,827	261,979	275,077
Telephone	12,000	26,759	38,202	30,000	40,000
Other	21,282	8,170	23,425	14,992	16,000
Subtotal	\$2,319,966	\$2,187,021	\$2,573,137	\$2,952,773	\$3,178,779
Capital Outlay	830,700	1,763,420	947,506	1,029,000	535,500
Total	\$3,150,666	\$3,950,441	\$3,520,643	\$3,981,773	\$3,714,279

*Does not include new positions

Figure 19. Actual Expenditures/Estimated Budget FY89 - FY93

The level of expenditures is expected to decrease by 6.7 percent or -\$267,494 in the total budget from FY92 to FY93.

Funding for the Institutional Plan for Computing

The following figure shows the distribution of funds over the next three years in order to fund the recommended capital and operating expenditures identified in the plan.

FUNDING INSTITUTIONAL PLAN FOR COMPUTING FY92 - FY95				
Description	Fiscal Year			
	FY92	FY93	FY94	FY95
Source of Funds				
Beginning Balance	\$ 419,813	\$ 30,313	\$ -9,232	\$ 105,208
Transfer Funds	595,000	550,000	550,000	400,000
Transfer Funds - Interest	29,500	15,000	15,000	20,000
Total Funds Available	<u>\$1,044,313</u>	<u>\$ 595,313</u>	<u>\$ 555,318</u>	<u>\$ 525,208</u>
Expenditures				
Capital	\$1,014,000	\$ 535,500	\$ 421,000	\$ 484,000
Operating	0	69,495	29,110	35,720
Total Expenditures	<u>\$1,014,000</u>	<u>\$ 604,995</u>	<u>\$ 450,110</u>	<u>\$ 519,720</u>
Balance Forward	<u>\$ 30,313</u>	<u>\$ -9,682</u>	<u>\$ 105,208</u>	<u>\$ 5,488</u>

Figure 20. Funding

The funding table is divided into source of funds and expenditures. The source of funds defines the balance in the long range computer account and transfers that have been planned in the institutional financial plan. The total funds available estimates the amount of money available each year based on the estimated expenditures.

The expenditures identified are the capital and operating costs identified each year in the computing plan. The balance forward is the difference between funds available and total expenditures. The balance forward from one year is the beginning balance in the next year. The table shows an ending balance in FY95 of \$5,488 assuming all items recommended in the plan are purchased at the budgeted amounts.

Funding Sources

As of FY95 no additional funds will be needed to fund the items recommended in the plan. In FY96 we are projecting the need for 400 to 500 additional workstations to support student and faculty growth in the use of computers. We are estimating the computer equipment and software budget to be \$2,500,000. There are several alternatives that can be used to generate the additional funds.

- **Computing Fee**

Currently lab fees are charged to Computing and Information Systems and CADD courses only. With the non-traditional courses using computers in the classroom, a more equitable method should be developed to charge equally for all students using computing on campus.

Over the last four years we have reviewed various fee structures to charge for the use of computers on campus. The options reviewed were computing fee based on usage, flat fee for all courses using computers, a flat fee for all courses, and a fee per each quarter hour for all students. Several labs on campus are not restricted to students using computers in their classes only, the recommended fee option is a fee

per quarter hour for all credit courses. If we charge one dollar per credit hour we would generate adequate funds to provide the additional workstations needed to meet the students needs. If we started charging the fee in FY93 by FY96 we would generate \$763,290 in FY93, \$786,195 in FY94 and \$809,775 in FY95. With interest we would accumulate \$2,564,060 by FY96.

- **Educational Fund**

Funds that are available from the fund could be transferred to cover part of the funding needed.

- **Long Term Financing**

We have used long term financing over the last several years to provide funds for computing. If capital funds are not available, long term financing may be the approach we want to use for some of the funding. The current loan rates are very low.

- **Joint Partnerships**

Many colleges and universities have developed joint partnerships with corporations in providing hardware and software. Most of the joint partnerships require a commitment from the institution or people resources to assist in the development of software. Some joint partnerships require the institution to be a show place for the vendor product. The institution would provide seminars and tours on what is happening. This also requires people support from the institution. The savings from a partnership could provide a discount from 5 to 50 percent on the products.

- **Grants and Donations**

Grants and donations are other approaches that can be used to provide computer hardware and software. The college has successfully received grants to cover high technology advancements. Donations can provide some hardware but most of the time the equipment donated is older technology which could require substantial funds to maintain.

Unit Cost Analysis

The following table shows a comparison of the unit cost analysis for Actual FY89 - FY91 and the projected unit cost for FY92 - FY95 based on the funding of the Institutional Plan for Computing. The table shows the actual student FTE's for FY89 - 91 and the budgeted FTE's through FY95. The unit cost is the total dollars spent per student FTE at the college for instructional and administrative computing.

UNIT COST ANALYSIS ACTUAL/PROJECTED FY89-95							
	<u>Actual</u>			<u>Budget</u>	<u>Institutional Plan For Computing</u>		
	<u>FY89</u>	<u>FY90</u>	<u>FY91</u>	<u>FY92</u>	<u>FY93</u>	<u>FY94</u>	<u>FY95</u>
Student FTE	13,927	15,063	15,811	16,468	17,127	17,812	18,524
College Unit Cost	\$98.95	\$101.90	\$110.62	\$120.00	\$127.00	\$135.00	\$143.00
Computing Unit Cost	7.54	9.17	7.85	8.40	7.62	7.83	7.58
Instructional	1.89	2.29	1.96	2.10	1.90	1.96	1.89
Administrative	6.02	6.88	5.89	6.30	5.72	5.87	5.69
Percentage of Computing/ College Unit Cost	7.6%	9.0%	7.1%	7.1%	6.0%	5.8%	5.3%

Figure 21. Unit Cost Analysis Actual/Projected FY89 - 95

The college unit cost for FY92 is \$120.00 per student semester credit hour. The unit cost for computing in FY92 is \$8.40. This is divided into \$2.10 for Instructional Computing, and \$6.30 for Administrative Computing. The unit cost for computing will change each year to \$7.62 in FY93, \$7.83 in FY94, and \$7.58 in FY95.

Appendix A. COMMITTEE MEMBERS

The following is a complete list of members from the computing committees: Academic Divisional Computing Committees, Academic Computing Planning and Advisory Committee, Administrative Systems Users Advisory Committee, and Computing and Information Management Committee.

Academic Divisional Computing Committees

<u>Representative</u>	<u>Title</u>	<u>Department/Discipline</u>	<u>Extension</u>
<i>Business and Services</i>			
Mike Drafke	Assoc. Professor	Business/Marketing/Management	2075
Julia Fitzpatrick-Cooper	Instructor	Ornamental Horticulture	2526
Bill Fox	Professor	Computer Information Systems	2198
Jack Kapoor	Professor	Business/Management/Marketing	2032
Ron Kapper	Professor	Office Careers	2188
Lori Mattas	Instructor	Travel & Tourism	2684
Rukshad Patel	Instructor	Accounting	3037
*Carol Scott-Chair.	Coordinator	Fashion Merchandise & Design	2058
<i>Communications</i>			
Jan Geesaman-Chair.	Asst. Prof.	English	2327
Dan Lindsey	Dean	Communications	2047
*Alice Snelgrove	Asst. Prof.	English	2749
Dan Thorpe	Asst. Prof.	English	2778
Frank Tourangeau	Assoc. Professor	Speech	2054
<i>Humanities</i>			
*Nancy Conradt	Asst. Professor	Humanities	2009
Lee Kesselman	Assoc. Professor	Choral Music	2552
Ed Kies-Chair.	Dean	Humanities	2047
<i>Natural Sciences</i>			
Stuart Anderson-Chair.	Professor	Mathematics	2062
Marty Huske	Professor	Mathematics	2171
Bill Pehrson	Assoc. Professor	Physical Education	2479
Herb Schulz	Professor	Physics	2436
*Gerald Krusinski	Professor	Mathematics	2055
<i>Occupational & Vocational Education</i>			
David Colburn	Instructor	Health & Public Services	2579
Mary Dreher	Assoc. Professor	Health & Public Services	2569
Glenn Hansen	Asst. Professor	Technology	2495
Joanne Metler	Asst. Professor	Health & Public Services	3065
Frank Salvatini	Instructor	Health & Public Services	2043
John Sprague-Williams	Asst. Professor	Electro-Mechanical Tech.	2192
*Tom Robin-Chair.	Professor	Manufacturing Tech.	2030
<i>Open Campus</i>			
Joyce Abel	Assoc. Dean	North Regional Center	495-3010
*Joe Barillari-Chair.	Director	Instructional Design	2490
Sue Ebert-Edwards	Program Manager	Business/Technology Center	2180
*Peter Klassen	Professor	Interdisciplinary & Sociology	2081
<i>Social & Behavioral Sciences</i>			
Jack Harkins	Professor	Sociology	2022
*Alan Lanning	Professor	Psychology	2028
Walter Packard	Dean	Social & Behavioral Sciences	2156
Dean Peterson-Chair.	Assoc. Professor	Sociology/Religious Studies	3036
Mario Reda	Professor	Sociology	2134
Pat Slocum	Asst. Professor	Psychology	3043
*ACPAC Representative			

Academic Computer Planning and Advisory Committee

<u>Representative</u>	<u>Title</u>	<u>Department/Discipline</u>	<u>Extension</u>
<i>Business and Services</i>			
Carol Scott	Asst. Professor	Fashion Merchandise & Design	2058
* Vince Pelletier	Dean	Business & Services	2592/93
<i>Communications</i>			
Alice Snelgrove	Professor	English	2749
<i>Computing and Information Systems</i>			
**Ed Leninger	Manager	Distributed Computing	2781
**Gary E. Wenger	Executive Director	Computing & Info Systems	2470/71
<i>Humanities</i>			
Nancy Conradt	Professor	Humanities	3045
<i>Learning Resource Center</i>			
Nancy R. Thomas	Asst. Professor	Learning Resource Center	2383
<i>Natural Sciences</i>			
Gerald Krusinski	Professor	Mathematics	2055
<i>Occupational & Vocational Education</i>			
Tom Robin	Professor	Manufacturing Tech.	2030
<i>Open Campus</i>			
Joe Barillari	Director	Instructional Design	2490
Peter Klassen	Professor	Interdisciplinary & Sociology	2081
<i>Social & Behavioral Sciences</i>			
Alan Lanning	Professor	Psychology	2028
* Chairperson			
**Ex officio			

Administrative Systems Users Advisory Committee

<u>Representative</u>	<u>Title</u>	<u>Division/Area</u>	<u>Extension</u>
<i>Academic Services</i>			
Bob Regner	Director	Student Financial Aid, Career, Planning & Placement and Judicial Officer	2213
<i>Administrative Affairs</i>			
Tom Ryan	Director & Controller	Financial Affairs	2219
<i>Central Campus</i>			
Walt Packard	Dean	Social & Behavioral Sciences	2156/57
<i>Computing and Information Systems</i>			
**Donna Berliner	Manager	Mainframe Computing	2475
**Ed Leninger	Manager	Distributed Computing	2781
* Gary E. Wenger	**Executive Director	Comp & Info Systems	2470
<i>External Affairs</i>			
Christine Porter	Coordinator	Campus and Community Events	2456
<i>Human Resources</i>			
Howard Owens	Director	Human Resources	2460
<i>Learning Resource Center</i>			
Bob Veihman	Associate Dean	Learning Resource Center	2659
<i>Open Campus</i>			
Joe Barillari	Director	Instructional Design	2490/91
<i>Planning and Information</i>			
Chuck Erickson	Director	Adms, Regist, and Records	2481
Harlan Schweer	Acting Director	Research and Planning	2335
* Chairperson			
**Ex officio			

Computing and Information Management Committee

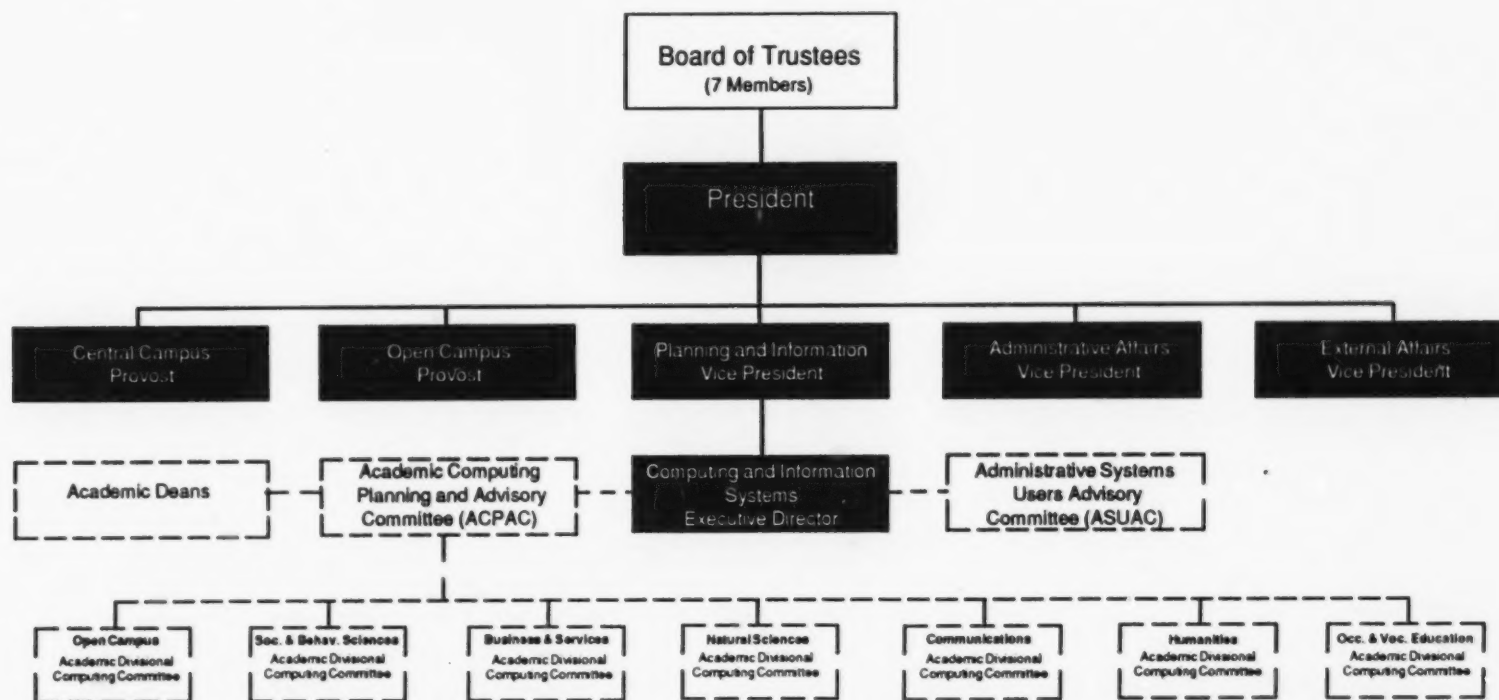
<u>Representative</u>	<u>Title</u>	<u>Department</u>	<u>Extension</u>
Ken Kolbet	Vice President	Administrative Affairs	2218
Ron Lemme	Vice President	Planning and Information	2285
Harold McAninch	President	College of DuPage	2202
Dick Petrizzo	Vice President	External Affairs	2265
Ted Tilton	Provost	Central Campus	2695
Carol Viola	Provost	Open Campus	2577
*Gary E. Wenger	Executive Director	Computing and Information Systems	2470

* Chairperson

February 7, 1992

Appendix B. COMPUTING GOVERNANCE STRUCTURE

College of DuPage COMPUTING GOVERNANCE STRUCTURE



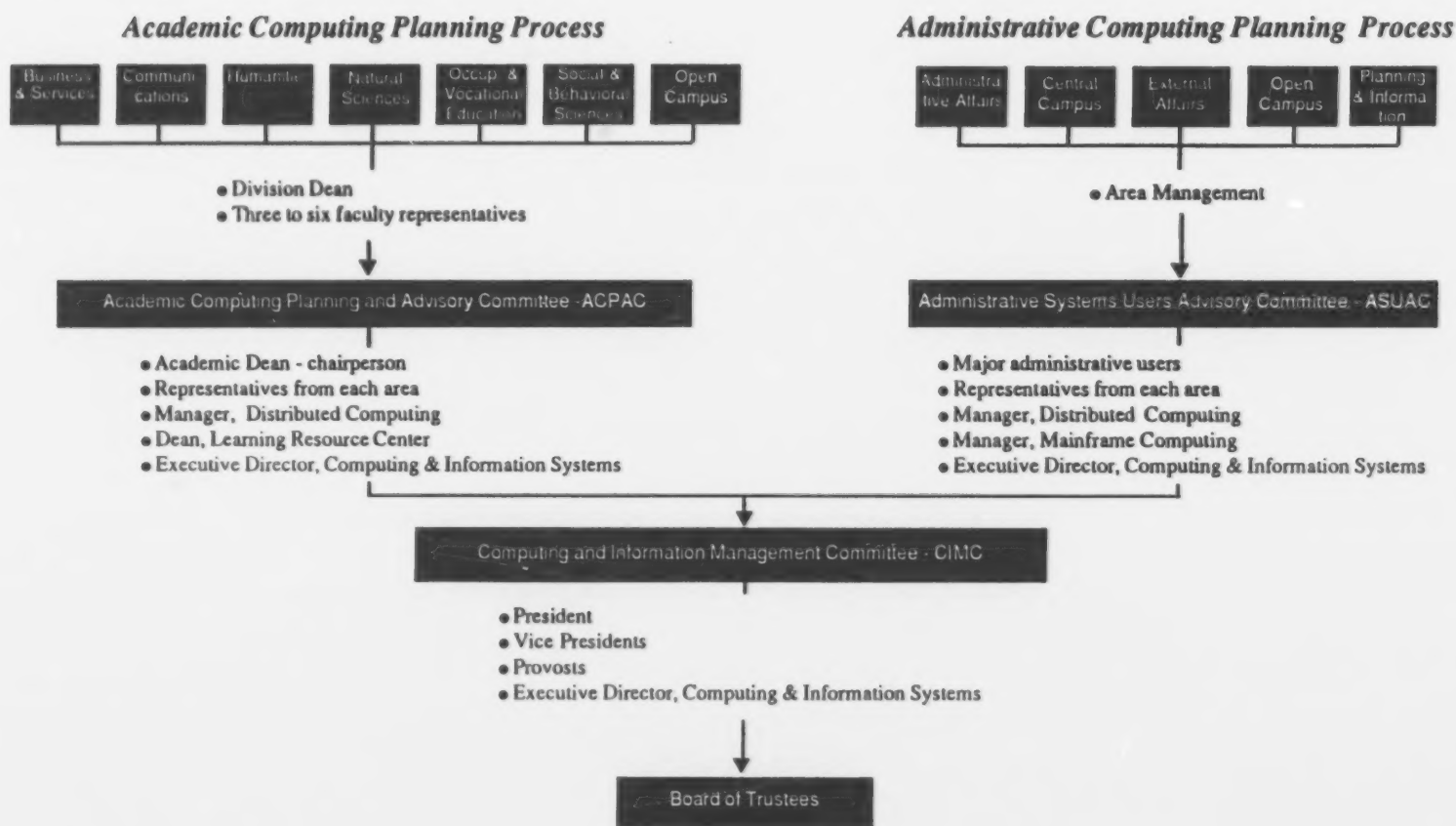
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February 7, 1992

Appendix C. COMPUTING PLANNING PROCESS

College of DuPage

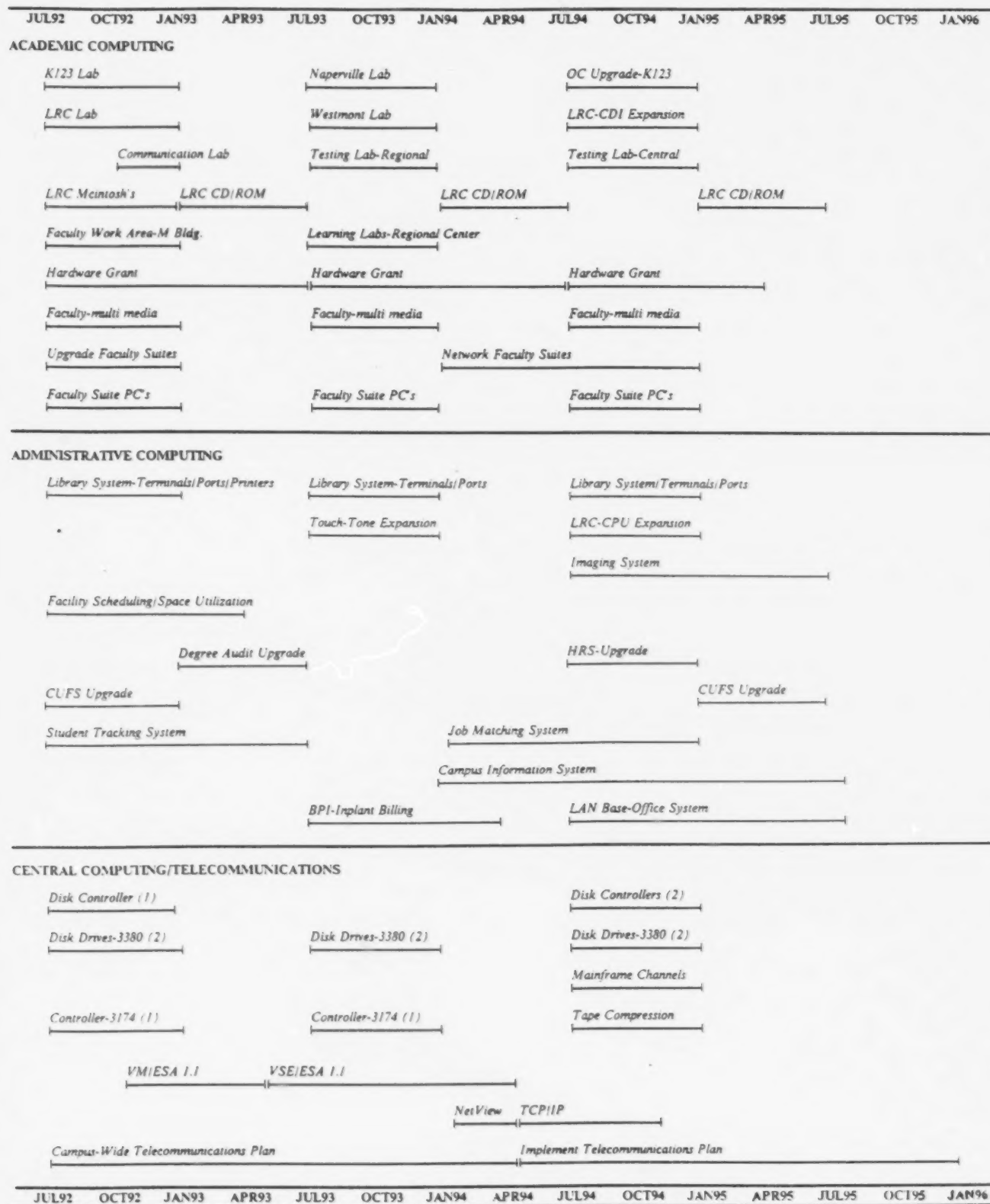
COMPUTING PLANNING PROCESS



Appendix D. PLANNING CYCLE FY93-FY95

**COMPUTING AND INFORMATION SYSTEMS
PLANNING CYCLE FY93-FY96**

February 7, 1992



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**COLLEGE OF DUPAGE
INSTITUTIONAL PLAN FOR
COMPUTING
FY93 - FY95**

February 7, 1992

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Preface

This document represents the results of our concerted efforts over a period of 5 months. Although a substantial amount of data was collected in our research efforts, we have struggled to make it as coherent and easy to read as possible.

This document is divided into the following major sections:

- "Introduction" describes the demographic information, mission and vision statement, and the five year institutional goals of the college.
- "The Planning Process" describes how we used surveys and suggestions from both general and *ad hoc* committees to develop a plan meaningful to the college as a whole.
- "The Current Environment" describes the current computer environment in terms of governance, computer support, and computer systems and facilities.
- "Academic Computing" describes computer usage in all the major instructional areas of the college as it was identified in the surveys, and makes appropriate action plans and financial recommendations in terms of hardware, software, and support needs.
- "Administrative Computing" describes and evaluates the information processing services which provide the college with the data necessary to make decisions and carry out the day-to-day operations. Appropriate action plans and financial recommendations in terms of hardware, software, and support are provided.
- "Central Computing" evaluates systems software and hardware, communications, and networking; and makes appropriate action plans and financial recommendations.
- "Summary Recommendations and Financial Considerations" summarizes all recommendations made for academic, administrative, and central computing; and describes special financial considerations.

Acknowledgments

This project could not have been completed without the cooperation and support of:

- The Academic Divisional Computer Committees (ADCC), Academic Computing Planning and Advisory Committee (ACPAC), Administrative Systems Users Advisory Committee (ASUAC), and Computing and Information Systems Management Committee (CIMC). See Appendix A for a complete list of committee members.
- Project Team - Donna Berliner, Manager Mainframe Computing; Sandra Geis, Manager Communications, Systems & Operations, Ed Leninger, Manager Distributed Computing; Gary E. Wenger, Executive Director, Computing and Information Systems, Project Leader.
- The staff of Computing and Information Systems

Special thanks are in order for Cathy Rathke, Lead Technical Writer/Editor; and secretarial staff, Joan Stevens and Betty Hinz.

INTRODUCTION

The College of DuPage is a community college located 25 miles west of Chicago, Illinois in Glen Ellyn. The campus consists of seven buildings on a 265 acre site and three regional centers within 10 miles of the main campus. In addition to a central campus and three in-district regional centers, the college has more than 80 different satellite centers. These range from libraries, elementary and high school classrooms, community houses and churches to municipal buildings and industrial sites.

The college serves District 502 with a population of 830,000 people. In 1990-91 the college served 75,000 different students and the enrollment for fall quarter of 1991 was 36,322 students. Governed by a seven-member board elected from the district and one non-voting student trustee, the college has 304 full-time faculty, 1,446 part-time faculty, 723 staff, and 48 administrators.

College of DuPage is divided into Central Campus and Open Campus, both administered by one central administration. The Central Campus in Glen Ellyn offers both credit and non-credit programs. Open Campus is responsible for delivering education to off-campus programs, learning lab, skills center, testing, and independent study courses. The central administration provides support services for students and faculty, including planning, computing, admissions, registration and records, research, finance and business services, public relations, grants, foundation, and physical support services.

Mission

Provide educational opportunities of the highest quality for people of any race, creed, gender, or national origin who want to improve their vocational and avocational skills, or enjoy cultural or recreational activities.

Vision Statement

We envision a future in which the quality of life is rich, and the sense of community is strong. While reaffirming our pledge to maintain excellence in our primary objective--the education and development of those we serve--we concurrently accept the challenge to seek unexplored paths which may help prepare our community for the challenges of the next century. We dedicate ourselves to educating and empowering more responsible citizens, promoting a better quality of life for residents of our district, and providing leadership in protecting our natural and human resources.

Five Year Goals

The college has developed a set of five year institutional goals for FY93-FY97. Information technology will essentially impact each goal in some form in how the goal is accomplished.

- Design programs, courses and services that include a broad range of strategies that will provide students with the tools for success.
- Improve the quality of processes and services which have an impact on student learning and success in the work environment.
- Prepare all constituency groups to live and work in a culturally diverse global society.

- Design programs, courses, and services which expand opportunity for success of at-risk and underprepared students.
- Design and implement comprehensive assessment and course placement strategies to enhance student success.
- Improve internal communications through more efficient and effective sharing of information by the use of new technology, staff development, shared vision, and establishing of priorities.
- Expand the use of current and new technology to improve learning and support services to meet demands of the college's dynamic growth.
- Plan and manage effectively for rapid growth of the college.
- Encourage Board, faculty and staff to exercise leadership in community college organizations and conferences at the regional, state and national level.
- Review the mission, vision and philosophy (values statements) to insure there is congruence in direction among the three.

Issues

Over the next decade, the College of DuPage will face many problems and new challenges. There are several internal issues and external trends that will impact the direction of the college. The major internal issues deal with the *management of growth, changing characteristics of our students, allocation of resources, maintain/enhance quality and communications*. The major external trends are *changing demographics, limited funding, rapid rate of technology change, utilization of growth, and increased demands for convenient services*.

Today and in the future computing will have an ever increasing role in dealing with major issues. It is very important for the college to be a leader in information technology by using technology in our own operation, as well as by teaching the use of technology to students. Planning for computing is the key element to understanding the real issues and their impact on the institution.

The Institutional Plan for Computing provides information on issues, goals, recommendations, and financial considerations for academic, administrative, and central computing for fiscal years 1993-1995. The recommendations provide the strategic direction necessary to keep the college in step with technology to take advantage of future advancements. This will allow us to be more efficient and effective with the current resources, address many of the issues while satisfying the future goals of the institution as defined by the vision statement and the college five year goals. The financial considerations are the costs for centrally funded programs. From an academic perspective, any hardware and software costs related to cross discipline student labs and faculty support are centrally funded. For administrative computing, any software and hardware related to cross department applications are centrally funded, as are all mainframe hardware and software for Central Computing. Any hardware and software for an individual department budgeting is the responsibility of the user department.

Also included are sections summarizing the staffing needs, the total institutional financial considerations with various funding alternatives and the impact on unit cost. The recommendations are divided into the three types of resources, hardware, software, and support that are needed to meet the goals as defined.

THE PLANNING PROCESS

Overview

An integral part of any successful planning process must be the conscientious contribution to the plan by all its constituents. Management or individual attempts to impose a college computing plan which has not taken into consideration the needs, constraints, and objectives for all areas of the college must certainly be doomed to failure. To avoid such errors, and to make the plan meaningful, we set up a planning methodology, employed carefully constructed surveys, and heeded suggestions from general and *ad hoc* committees. The plan is for three years and is updated on a two year cycle. The planning methodology, surveys and committees are described in the following sections. Appendix A is the current planning process used for planning computing.

Planning Methodology

We used a simple approach to determine the planning methodology. There were six basic questions that needed to be answered.

- Where are we?
- Where do we want to go?
- How do we get there?
- When will it be done?
- Who will be responsible?
- How much will it cost?

A project team was setup to provide the majority of the work effort on the plan. The team consisted of the following: Gary E. Wenger, Executive Director, Computing and Information Systems; Donna Berliner, Manager, Mainframe Computing; Ed Leninger, Manager, Distributed Computing; and Sandra Geis, Manager, Communications, Systems & Operations.

The Executive Director served as project leader and coordinator of the planning effort.

Surveys

We used three surveys, the Academic Computing Survey, the Administrative Computing Departmental Survey, and the Academic Computing Departmental Survey, as well as individual interviews with each department on campus to report on the academic and administrative computing needs of the institution.

Academic Computing Survey

The Academic Computing Survey was generated to provide faculty with a method of contributing to the plan. The survey provided data on the following areas:

- Priority on the type of computer hardware
- Priority on the type of computer software
- Level of support needed on use of computers
- Level of support provided on the use of computers
- List of most important computing areas
- Incentives needed to use computers

Appendix B is the Academic Computing Survey.

Administrative Computing Departmental Survey

The Administrative Computing Departmental Survey generated responses from each dean/director regarding their departmental administrative computing needs. The Executive Director of Computing and Information Systems and/or the Manager of Distributed Computing, Manager of Mainframe Computing, and support staff from Computing and Information Systems interviewed each dean/director. The survey provided the following information:

- Computer equipment needed to provide adequate support over the next three years
- Projected growth of existing administrative applications
- New computer applications needed to replace manual operations
- Type of support needed by user departments (i.e., training, documentation, microcomputer repair, etc.) received from personnel in Computing and Information Systems.
- Future computer support areas such as graphics, electronic mail, etc.
- Connectivity needs (i.e., the need for information from one computer system to be sent to another system on campus)

Appendix C is the Administrative Computing Departmental Survey.

Academic Computing Departmental Survey

The Academic Computing Departmental Survey generated feedback from the deans and associate deans of each division. The Executive Director of Computing and Information Systems and/or the Manager of Distributed Computing interviewed each dean, associate and/or assistant dean. The survey provided the following information:

- Current and projected student use of computers in number of students and contact hours.
- Faculty use of computers
- Current and future software needs
- Plans for expansion (provided by the divisions responsible for computer labs)
- Computer support from personnel in Computing and Information Systems
- New academic computing applications

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The surveys provided precise and accurate information about the current computing on campus, and the future needs for both instructional and administrative areas of the college: Appendix D is the Academic Computing Departmental Survey.

Committees

Four committees focused our view of the college impetus, and contributed suggestions, reviews, and recommendations for the planning process:

- Academic Divisional Computer Committee - ADCC
- Academic Computing Planning and Advisory Committee - ACPAC
- Administrative Systems Users Advisory Committee - ASUAC
- Computing and Information Systems Management Committee - CIMC

Academic Divisional Computer Committee - ADCC

Each academic division identified three to five faculty members involved in computing. These members served on the Academic Divisional Computer Committee to address computing needs. The charge of the committee follows:

- Define divisional computing goals and objectives
- Serve as a nucleus of informed faculty to communicate with other faculty about computing
- Collect information from the division and incorporate the information into a computing plan for the division
- Provide a divisional plan to the ACPAC committee which identified anticipated and projected new computer use and direction for computing at the divisional level
- Review and prioritize faculty grant proposals relating to computing

Academic Computing Planning and Advisory Committee - ACPAC

The Academic Computing Planning and Advisory Committee consisted of faculty representatives of each academic division, one academic dean, Dean, Learning Resource Center, the Executive Director Computing and Information Systems, and the Manager of Distributed Computing. An academic dean serves as chairperson on a rotating basis. The charge of the committee follows:

- Define academic computing goals and objectives for the college
- Develop policies and procedures
- Review academic computing standards
- Define the current computing environment
- Evaluate computer resources and support
- Provide feedback to the divisional computer committee and other faculty members
- Review and prioritize academic computing project requests
- Review ongoing divisional computing needs
- Evaluate and award computing grants proposals based on funding available

- Review the Academic Computing Plan

Administrative Systems Users Advisory Committee - ASUAC

The Administrative Systems Users Advisory Committee consisted of the major computing users and director/dean level representatives from the five administrative units (Central Campus, Open Campus, Administrative Affairs, External Affairs, and Planning and Information) as well as the Executive Director, Manager Mainframe Computing, and Manager Distributed Computing from Computing and Information Systems. The charge of the committee was to:

- Develop policies and procedures related to Administrative Computing.
- Review and prioritize all administrative programming requests
- Provide input from their units on computing needs for hardware, software, and support
- Provide feedback to the administrative units represented
- Provide input on future computing needs
- Evaluate the Administrative Computing Plan
- Monitor the software and support needs

Computing and Information Systems Management Committee - CIMC

The Computing and Information Systems Management Committee consists of the President, Vice President Planning and Information, Vice President Administrative Affairs, Vice President External Affairs, Provost Central Campus, Provost Open Campus, and the Executive Director Computing and Information Systems. The committee was responsible for:

- Reviewing institutional policies and procedures
- Reviewing campus wide standards
- Reviewing the academic planning recommendations
- Reviewing the administrative planning recommendations
- Reviewing the future direction recommendations
- Recommending priorities
- Recommending funding levels to the Board of Trustees

Final funding decisions for the Institutional Plan for Computing are made by the Board of Trustees during its review. Appendix E shows the organization of the planning committees for both the administrative and academic computing planning processes.

CURRENT ENVIRONMENT

Overview

The current environment for computing at the College of DuPage consists of computing support (that is, people) and computing systems and facilities (that is, hardware and software). A proper mixture of computer support, hardware and software is necessary for maximum operational efficiency. The following sections evaluate the current environment in terms of computer support and computer systems and facilities.

Computing Support

Computing support consists of the governance structure and those departments that help support computing on campus. The following sections describe the overall governance, as well as the support provided by each of the five departments: Computing and Information Systems, Instructional Design, the Learning Resource Center, the instructional divisions, and **Open Campus**.

Governance

The governance structure is the body of persons that constitute the governing authority of the organization in dealing with computing on campus. The current structure consists of a Computing and Information Systems Management Committee (CIMC); three advisory committees, the Administrative Systems Users Advisory Committee (ASUAC); Academic Computing Planning and Advisory Committee (ACPAC); Academic Divisional Computing Committees (ADCC); and the Administrative Organizational Structure. Refer to Appendix F for a governance reporting structure.

Computing and Information Systems Management Committee

The Computing and Information Systems Management Committee is responsible for the institutional policy decisions relating to computing, determining the computing priority issues on an institutional basis, capital budgeting and funding level recommendations to the board, review and approval of the planning process, and the use of new information technologies on campus. The committee consists of the President, Provost Central Campus, Provost Open Campus, Vice President Administrative Affairs, Vice President External Affairs, Vice President Planning and Information, and Executive Director Computing and Information Systems.

Administrative Systems Users Advisory Committee

Administrative Systems Users Advisory Committee is an advisory committee to the Executive Director of Computing and Information Systems. The committee is responsible for administrative computing issues on campus. The group deals with setting priorities on administrative programming requests and reviewing data and database needs, administrative software application needs, and computer hardware needs. They are also responsible for reviewing policy, procedure, and planning issues.

The membership consists of at least one representative from each major administrative area of the college and additional representation from major computing users. The current membership consists of: the Director/Controller Financial Affairs from Administrative Affairs; the Dean of Business and Services, Director Student Financial Aid, and Associate Dean Learning Resource Center from Central Campus; Coordinator Campus and Community Events from External Affairs; Director, Instructional Design from Open Campus; Director Registration and Records, and Director of Research and Planning from Planning and Information; and the Executive Director, Manager of Mainframe Computing, and Manager of Distributed Computing from Computing and Information Systems.

Academic Computing Planning and Advisory Committee

The Academic Computing Planning and Advisory Committee is an advisory committee to the Executive Director Computing and Information Systems. The committee is responsible for academic computing issues on campus. The current charge is to gather and evaluate information on academic computing and provide input to the planning process. They are responsible for evaluating computing resources and making suggestions on how to improve computing on campus.

The membership consists of representatives from the following academic areas of the college: Business and Services, Communications, Computing and Information Systems, Humanities, Learning Resource Center, Natural Sciences, Occupational and Vocational Education, Open Campus, and Social and Behavioral Sciences. An academic dean serves as chairperson on a rotating basis. The chairperson reports to a committee of academic deans.

Academic Divisional Computing Committee

The Academic Divisional Computing Committee provides information and support to Academic Computing Planning and Advisory Committee. The committee's primary responsibility is defining divisional computing goals, serve as a nucleus to inform faculty about computing and review and prioritize faculty grant proposals. The membership consists of three to five faculty involved in computing. The following academic divisions have committees: Business and Services, Communications, Humanities, Natural Sciences, Occupational & Vocational Education, Open Campus and Social & Behavioral Sciences.

Administrative Organizational Structure

Computing and Information Systems reports to the Vice President Planning and Information who, in turn, reports to the president of the college. Appendix F is an organizational chart of the institution showing the reporting structure of Computing and Information Systems. The Executive Director of Computing and Information Systems is responsible for academic and administrative computing. Functional responsibilities include planning, budgeting and the operation of the computer systems.

Computing and Information Systems originally provided support for data processing only, i.e., business functions. Later academic computing support was added. Several new areas are emerging, i.e. office automation, printing systems, imaging and communications, all of which need greater coordination, planning and support.

The trend in higher education is to have a single individual coordinate and plan for computing on campus. As the organization changes and evolves to incorporate information technology into its business activities, coordination and planning for information technology including communications, office automation, data processing, library automation, printing services, and personal computers are imperative.

Computing and Information Systems

Computing and Information Systems provides personnel to assist students, faculty, and staff who may be working with computers, learning about computers, or considering the purchase of com-

puters. Computing and Information Systems is divided into three departments: Distributed Computing, Mainframe Computing, Communications, Systems & Operations.

Each department provides a special function to the institution and only those areas can provide the support. The following figure shows the current support for each functional area by full time, part time and total FTE's.

<u>AREA</u>	<u>PERMANENT FTE FULL-TIME</u>	<u>STUDENT PART-TIME</u>
Executive Director's Office	3.0	2.0
Mainframe Computing	10.0	.0
Distributed Computing	14.5	32.0
Communications, Systems, & Operations	11.25	.0
	38.75	34.0

Figure 1. Computing and Information Systems Staff Support in FTE's

There are 38.75 FTE employees in Computing and Information Systems. All departments except Communication, Systems, and Operations hire students to assist with the work load. In Academic Computing, about 30 part-time students provide support for the computer labs.

Appendix II shows a complete organizational chart of Computing and Information Systems (CIS). The following sections briefly describe responsibilities of each department. Appendix G shows a diagram of academic and administrative functions that are supported across the departments by CIS.

Distributed Computing

Distributed Computing is responsible for administrative and academic end user computing and maintenance of microcomputers and terminals on campus. This includes technical training and seminars, documentation for current and new systems, Microcomputer maintenance and repair, development of end user applications, and a technical review of all computer equipment and software requests for microcomputers. This also includes support for use of computers by students in combination with a curriculum of study, use of the computer by faculty as an aid to instruction, development of new applications, and the selection and use of instructional software for all systems. This area also manages several computer labs on campus.

Mainframe Computing

Mainframe Computing is responsible for new programming, modification of existing programs, correction of existing programs, and implementation and support of new systems development for the major administrative functions of the college. This includes the major online and batch systems, such as student records, billing, financial aid, human resource system, financial system, and capital assets. Also included is support for ad-hoc reporting and mainframe decision support systems.

Communications, Systems, & Operations

Communications, Systems, & Operations is responsible for the integrated use of mainframe computer hardware, system software, and communication facilities. This includes the installation, maintenance, and integration of the operating systems (hardware and software), the planning and development of system requirements, and the development and implementation of standards for security, data integrity and database. In addition, they are responsible for the actual operation and maintenance of the mainframe computer equipment, production schedules for the application systems, and data entry for input needed in the application system. This includes operations support for the IBM 9121, the Voice Response System, and the NCS 7008 scanner.

Learning Resource Center

The Learning Resource Center provides personnel to assist faculty, patrons, and students in the use of the computer work room lab which includes scheduling of the lab, software distribution, and assistance in using computers.

Instructional Divisions

Faculty support each other in the use of computers and have initiated computer training with applications in their areas of specialty. For example, word processing training has been initiated by Humanities faculty; integrated software training, by Computer Information Systems faculty; and computer-aided design training, by Technology faculty. Some divisions share responsibility for the management and use of a computer lab located in their area (i.e., Business and Services and Office Careers share responsibility for the microcomputers; Technology, for CAD lab; and Natural Sciences and Engineering, for the Engineering Graphics lab). Student use of computers is partially supported by lab aides stationed in each computer lab and ultimately by the instructor who is teaching the computer-related course.

Open Campus

Student use of the BPI microcomputer labs in support of the Computer Information Systems program and the Regional Assistance Center is supported by individual instructors. The lab is managed by one lab supervisor and a program manager for the Computer Information Systems area. Computer use in the Learning Lab is supported by individual instructors or instructional aides stationed in the lab. Part-time faculty support the use of computers at off-campus locations. Computer systems located at each of the three regional centers are supported by staff at each of these sites. The Associate Deans for the regional centers work together on computer-related issues and, when necessary, consult with Computing and Information Systems on technical problems.

Instructional Design

The Office of Instructional Design works with the college community to assist in the improvement of instruction. Through its support of faculty projects, the OID facilitates the process of adopting new instructional technologies.

In its support of computer-assisted instruction, the Office of Instructional Design provides non-teaching assignments, management, coordination and course design assistance. Currently its activities include analysis of instructional software and assessment of hardware for potential instructional applications. The office assists by sharing information with faculty and staff on new trends in computer-based instruction and by providing in-service workshops on these new instructional technologies. In fulfilling its mission, the Office of Instructional Design works closely with Computing and Information Systems and other college offices.

Computing Systems and Facilities

Nonhuman computing resources for the college consist of systems (i.e., hardware and software) and facilities (i.e., computer labs). Systems can be described in terms of workload, computer equipment, the applications software, and the system software. Facilities can be described in terms of usage, staffing, and management for the lab. Current College of DuPage systems and facilities described in the following sections include:

- Mainframe System Resource
 - IBM 9121 System
 - Scanning System
- Other System Resources

Academic Alternatives Administrative System (ALAN)
Library System
CD-ROM Network

- Microcomputing and Terminal Resources
 - Administrative Users
 - Faculty Users
 - Student Users
 - Computing and Information Systems Training Center
 - Microcomputer Local Area Networks
- Academic Computing Lab Facilities
 - BPI Microcomputer Labs
 - Computer Graphics Lab
 - Davea Regional Computing Lab
 - Desktop Publishing Lab
 - Fashion Design Lab
 - Glendale Heights Learning Center Lab
 - Information/Word Processing Lab
 - K123 Microcomputer Lab
 - Lombard Learning Center Lab
 - LRC Computer Workroom
 - Manufacturing Technology Computer Lab
 - Naperville Regional Computer Lab
 - Nursing Lab
 - Open Campus Apple Lab
 - Open Campus Micro Lab
 - Photography Lab
 - PLATO CAI Lab
 - Psychology Computer Lab
 - Seaton Computing Center
 - Skills Center Computer Lab
 - Testing Lab
 - Travel and Tourism Computer Lab
 - Westmont Regional Computer Lab
- Academic Software Resources

Mainframe System Resource

Currently the college has one mainframe system, the IBM 9121 Model 190. The following section provides a general description of IBM, it's system hardware, system software, and application software.

IBM 9121 System

Description: The major administrative computer system at the college, the IBM 9121 model 190 supports all major student and administrative systems. Student information maintained on the mainframe includes registration, billing and receivables, financial aid and grades. Major administrative systems residing on the mainframe include Human Resources, Capital Assets, and CUFS (the financial accounting system).

The mainframe also supports mainframe word processing, electronic mail, and end user computing using Application System (AS). Instructional support is provided via the Multi-User System for Interactive Computing system (MUSIC). Appendix I shows a current configuration of the IBM mainframe and how the following hardware components are connected.

System Hardware: This system is based on the IBM 9121 processor unit, a medium capacity unit with 64 million bytes of internal memory capable of executing 7.5 million instructions per second

via 16 communication channels, the system connects to a variety of devices, including communication devices or controllers, printers, auxiliary or direct access disk storage, terminals, magnetic tape storage, and control units. A discussion of each device category follows:

- **Communication Devices** - Collectively these devices permit equipment such as computer terminals, personal computers and printers to communicate with the system either in a local or remote setting. The communication devices include: three IBM 3274 and 13 IBM 3174 communication control units, each providing 32 ports for terminals or printers; one IBM 3745 communication controller used to communicate with regional centers via 12 multiplexor ports; and one IBM 7171 protocol converter used for communication between non-IBM terminals and the 9121 mainframe.
- **Disk Storage** - Direct Access Storage Devices, known as DASD, provide storage for the vast quantities of data, application, and system programs required to operate the computer system. Historically, the need for disk storage tends to increase relentlessly over time as more system and application programs are added, and existing databases are enlarged. We currently have 16 IBM 3380 disk drives and six IBM 3380 disk drives for a combined total of approximately 40 gigabytes of disk storage. (One gigabyte equals approximately one billion characters of information.)
- **Magnetic Tape Units** - The 9121 system has four IBM 3420 tape drives and six 3480 cartridge units used for archival, backup, and special purposes.
- **Printers** - These are output devices providing hard copy reports, graphs, and charts. These printers include: a Hewlett-Packard HPP2689A laser printer capable of producing the equivalent of 45 to 180 printed pages per minute; an IBM 4248 impact printer rated at 4000 lines per minute; 11 IBM 3287 dot matrix printers capable of draft-quality remote printing at 120 characters per second; two IBM 3812 pageprinters used for high quality text and graphics output rated at 12 pages per minute; two Xerox 4045 Model 20 laser printers rated at 10 pages per minute; and an IBM 6180 plotter for low speed color graphics output.
- **Terminals** - The college has a variety of terminal types used as online data entry and/or inquiry devices. These include IBM 3270 type terminals, and IBM personal computers PC, PC/XT, AT, 3270 PC, 3270 AT and PS/2 models. The current maximum number of terminal ports available is 432 ports (local and remote), including ports for the 7171 protocol converter from the regional centers in addition to a variable number of dial-up ports.

This concludes a brief description of the physical structure and hardware of the IBM 9121 system. In order to more fully describe the system, a discussion of the current software is needed to provide a proper perspective of the power and limitations of this system.

System Software: System software consists of those operating system programs, utilities, languages, communication monitors, access methods, database programs and other miscellaneous special software that provides a bridge between the computer hardware and the end user. Appendix J shows the installed system software with vendor name, product, and version number.

The system operates within layers of software. At the core is a powerful operating system known as VM/ESA or Virtual Machine Extended System Architecture. This operating system package allows the system hardware resources to be shared by multiple operating systems running in what is known as "virtual machines." This environment permits maximal flexibility for the resources available as well as maximizing system integrity by keeping these operating system environments in separate virtual machines so that, for example, errors in a test application do not cause problems in a production online application.

We currently have several operating systems running under VM: CMS, VSE/SP2.1, and MUSIC.

CMS - The Conversational Monitor System is an interactive operating system designed specifically to run under VM. It allows a user access to the main system's resources and communication with other virtual machines running other operating systems. CMS currently is used in conjunction with the following system software:

- **AS - Application System** is an end user decision support productivity tool supported under CMS. Features include file creation, storage and sharing; graphics; ad-hoc reporting; and specialized functions.
- **DCF/XEDIT - Document Composition Facility (DCF)**. In conjunction with XEDIT, a mainframe text editor, DCF provides a sophisticated online text processing system for online editing and formatting of documentation.
- **GDDM - Graphical Data Display Manager** is a series of programs providing sophisticated mainframe color graphics.
- **FOCUS - A productivity tool from Information Builders** consisting of a report generator and links to existing mainframe files structure.
- **NET3270 - The Network Workstation Program** provides 3270 terminal emulation to users on local area networks. It also provides multiple session services and file transfer capabilities with MUSIC or VM.
- **SQL - Structured Query Language** is an IBM-supplied relational database management system. A database management system supports the creation, organization and maintenance of data files in a manner allowing flexible updating and reporting capabilities.

A number of other languages and utility programs are available under CMS, including Assembly Language and COBOL programming language compilers and change management system for the library of mainframe application programs.

VSE/SP2.1 - Virtual System Extended/System Product 2.1 is the main production operating system in use at the college. It runs under the VM operating system as one large virtual machine. The newer VSE/ESA will be replacing the VSE/SP system to take advantage of the capabilities of the new 9121 processor. A description of the major system software operating under VSE follows:

- **Top Secret - Top Secret** is a security system that protects VSE-CICS from illegal access. The system requires password changes every two months and only allows users access to programs for which they are authorized.
- **CICS - Customer Information Control System** is an IBM supplied terminal communication monitor that coordinates, maintains, and controls the transfer of data between online terminals and the mainframe computer. Most current online production systems at the college operate under this environment.

Two special software products that run under and in conjunction with CICS are PANVALET, an online editor used by Computing and Information Systems staff to enter, modify, and document programming code; and Omegamon-CICS, a performance monitor whose purpose is to identify problem areas in the functioning of CICS as well as provide usage and performance data for use in performance tuning.

Communication and access method system software is needed to provide for the transfer, storage, integrity, and access to data either within the local computer system or between the on-campus system and remote sites. This system software includes:

- **VTAM - Virtual Telecommunications Access Method** is an IBM developed software package for controlling, monitoring, and allowing remote locations to communicate with the 9121 mainframe. Areas such as Open Campus communicate with the mainframe using this method.
- **RSCS - Remote Spooling Communication Subsystem** is communication software for the VM-CMS environment permitting remote communication and specialized local data manipulation between virtual machines.
- **3745NCP - Network Control Program** is a set of software routines provided by IBM that control the physical connection of non-standard devices to the network controlled by VTAM on the mainframe.

- **VSAM** - Virtual Storage Access Method is an IBM-developed method of providing non-sequential access to files of data stored on auxiliary disk storage. The existing major applications at the college use this file access method.

There are a number of computer language compilers/assemblers including IBM Assembly language, RPGII, COBOL, and FORTRAN supported under the VSE operating system as well as a number of utility programs for such tasks as sorting and copying files, maintaining job accounting information, and keeping track of printed output.

Application Software: Application software consists of all programs written in-house or provided by vendors that produce useful output for end users. This output can be in the form of hardcopy reports, online terminal screens or any other media needed by users. Application software also provides for the creation and maintenance of files and databases containing student, financial, or other types of information needed. Below is a brief description of the major applications currently on the IBM 9121 system.

VSE Applications

- **CDAS** - The College of DuPage administrative system is the largest CICS online system currently operating at the college. It consists of:

SRS - The Student Records System maintains information necessary to support admissions, scheduling, registration, grades, and transcript processing. In addition, SRS provides instructors with necessary course, class, and fee information. SRS was originally purchased from Information Associates in FY81 and has been modified extensively in the following years.

The major user areas of this system are the Records Office, Registration Office, Instructional Services, Business Office and Financial Aid Office. The Student Record System is composed of six separate files:

<u>File</u>	<u>No. of Records</u>
Class Roster-33 Quarters	1,750,000
Codes	4,000
Course Inventory	10,600
Course Term-9 Years	136,000
Student Key	385,000
Student Key #2	205,000
Student Term-9 Years	1,900,000
Transcript Text	335,000

BRS - The Billing and Receivables System manages all student financial data as it relates to the Student Record System and Financial Aid System. It maintains the student's account through payments, schedule/bill printing, and subcodes associated with the transactions performed. The principle users of this system are the Business Office, Financial Aid Office, and Registration Office. The Billing and Receivables System has 1,600,000 records and purchased from Information Associates in FY83.

FA - The Financial Aid System is responsible for tracking federal, state, and local financial aid for students and monitoring student enrollment as well as student employment. The main users of this system are the Financial Aid Office and the Business Office. The Financial Aid System has a master file containing 104,000 records. This system was developed in-house in FY83.

DE - The Degree Audit System reports on a student's progress toward a particular degree and/or certificate. The main users of this system are counselors and the Records Office. The file containing requirements has approximately 17,000 records with 1,000 records in the exceptions file. Degree Audit was purchased from Miami University of Ohio in FY89.

CA - The Capital Assets System provides for tracking of all inventory items owned and maintained by the college. The Business Office is the main user of this system. There

are currently 28,000 inventory records on the file. This system was developed in-house in FY91.

ML - The Mailing List System contains 130,000 members within 550 lists. Its primary use is to print reports and/or lists for the Public Information Office. The Mail List System was developed in-house in FY92.

- CUFS - The College and University Financial System supports the college and foundation financial functions including budgeting, planning, revenue and expense accounting, and reporting; but excluding payroll and capital assets management. The Business Office is the main user of the system which was implemented in FY88. The system was purchased from American Management Systems.

The database consists of master tables and ledgers which hold:

<u>Record/Document Type</u>	<u>Number of Records/Documents</u>
Account Budget Lines	18,000 per year
Invoices	40,000 per year
Journal Entries/Cash Receipt	20,000 per year
Purchase Orders	40,000 per year
Vendors	25,000

- HRS - The Human Resources System, purchased from Integral Systems, consists of an automated Personnel System and Payroll System. The personnel portion of the system was operational in January of 1987. The payroll portion was implemented in August of 1987. The system provides salary, time reporting, job status, education, benefit accrual information, job history, expense distribution, and time away from campus information. The principle users are Human Resources and the Business Office. The system currently contains about 5300 employees.
- MIS - The Management Information System is a reporting system that provides information required for Illinois Community College Board regulations, tracks student enrollment, provides demographic information, and verifies data needed for state and federal reimbursement procedures. This system was developed in-house since FY86 and continues to be modified to meet state reporting requirements.

The principle users of this system are Research and Planning Office and Instructional Services. This system currently does not maintain any permanent files but accesses, sorts and extracts information from about 58,000 records at a time.

CMS Applications: Application software provided under the CMS operating system is currently not as comprehensive as the major administrative programs running in the VSE environment. The major applications included under CMS include:

- Application System is an end-user product developed by IBM. It provides several modules available to relatively non-technical computer users including reporting, file maintenance, graphics, project management, statistics, business communication, and business planning. These modules can be used relatively independently by users with a moderate amount of training. Currently applications including Project Management, Human Resource Reporting, Unit Cost Analysis, an automated Trendbook Display, a Time Away Tracking System, and an Aged Receivables tracking and follow up system have been implemented. The principal users of this system to date have been the Business Office and Computing and Information Systems. The Trendbook application provides wide access to statistical enrollment, curriculum, and other data for administrative users.
- BITNET is a nationwide cooperative computer network for higher education linking over 600 institutions in the world. The College of DuPage BITNET system, as implemented, allows college users to send messages to other users; share text files such as research proposals, manuscripts and letters; and access other network communication services. All CMS users at the college have potential access to this system. College users can gain access to ISAAC, the Information System for Advanced Academic Computing, via BITNET. ISAAC is a database of

academic software abstracts and bulletin board containing information of interest to academic users.

- Menu is an application developed by Computing and Information Systems personnel providing Electronic Mail services for CMS users. It also simplifies various file and document handling techniques provided under the VM/CMS operating systems. Menu is essentially a control program providing screen menus to simplify performing certain recurring functions involving messaging, printing documents, and accessing certain end user applications such as AS. It is intended to be used by both experienced as well as relatively new CMS end users.

One additional application running under the Menu System is the Human Resources Job Description application. This application allows CMS users to access Job Descriptions online via their terminals or microcomputers. The text files for these applications are maintained by the Human Resources area.

- Program Request is a system developed by Computing and Information Systems for entering, tracking, and monitoring administrative programming requests submitted by administrative areas of the institution. This application is a combined SQL database and AS (Application System) reporting system typical of future small application development in Computing and Information Systems. The main users of this system are the Computing and Information Systems staff and the administrative areas submitting programming requests.

MUSIC - (Multiuser System for Interactive Computing Applications): MUSIC is a multiuser interactive operating system that includes a collection of applications, compiler interfaces and utilities. Students use this system as an interface and editor for courses in COBOL, FORTRAN, PL/I, Assembler, RPGII, and SPSS programming languages. As a single virtual machine, MUSIC/SP can support the following:

- 3270 emulation and file transfer on an IBM PC microcomputer
- Electronic mail combined with a calendar system (TODO)
- Output to a variety of printers

Currently the MUSIC system is used to support a network of PC's in the Seaton Computing Center in a student lab environment supporting academic courses in COBOL, PL/I, Assembly Language, Fortran and RPGII programming languages, as well as numerous other courses including operating system, database techniques, systems analysis, and statistical analysis.

The electronic mail and scheduling system known as TODO has recently been enhanced and offers promise as a major application to provide these services at the college.

Scanning System

Description: The Optical Mark Reader, or scanner as it is better known, will read the markings of a #2 pencil on specific types of special forms and convert that to machine readable data. This machine readable data is written to a magnetic tape by the scanner and then processed on the IBM mainframe. The scanner will read pencil markings from three types of forms the college currently uses; the General Purpose Answer form, Mid-Quarter Enrollment Verification form and Final Grade form.

System Hardware

- NCS 7008 Mark Reader - Reads markings from #2 pencil at a rate of 3,000 sheets per hour and includes an 8,192 word programmable controller. The unit includes the select stacker feature to allow rejected sheets to stack separate from the readable sheets.
- Memory - Memory expansion feature upgrades the unit to 65,636 bytes.
- Transport Printer - Marks the sheets as they are read with the date of reading.

- Terminal Printer - TTY43 typewriter printer that operates at 30 characters per second. It is the means by which the operator can communicate with the machine by entering data and responding to error conditions.
- Tape Cassette - Allows for programs or data to be loaded to memory from a cassette tape.
- Magnetic Tape Unit - Data read from the scan sheets is transferred to the magnetic tape unit for use on the IBM mainframe. The tape reel used is no larger than 7 inches in diameter and 9 track only with a write density of 1600 Bytes Per Inch (BPI).

System Software: The operation system for the NCS 7008 Optical Mark Reader is called DOS-SIER. It controls the data manipulation and arithmetic functions.

Other System Resources

Currently Computing and Information Systems is responsible for three other systems at the college. These systems are essentially a smaller, lower capacity computer than the average size mainframe computer such as the IBM 9121. Usually, but not necessarily, they are dedicated to a single specialized function. Their systems use independent hardware architecture and often cannot share programming languages, operating systems, or hardware resources with each other. The systems in use at the college are described in the following sections. Each section provides a description of the major workload, the hardware resources, system software, and application software.

Academic Alternatives Administrative System (ALAN)

Description: ALAN is a LAN based system using IBM hardware, Novell Netware and PC-FOCUS application software providing administrative support for Academic Alternative non-traditional courses offered thru Instructional Alternatives. The system was developed in FY91.

Hardware Resources

- 1 - IBM PS/2 Model 80 file server
- 14 - IBM PS/2 Model 55SX workstations
- 1 - IBM PS/2 Model 50 communication server
- 3 - IBM PS/2 Model 55SX asynchronous communication servers
- 1 - IBM PS/2 Model 70 database server
- 9 - Hewlett-Packard LaserJet laser printer
- 2 - IBM QuietWriter III printers
- 1 - IBM ProPrinter printer

System Software: This LAN uses Novell Netware operating system software, QEMM memory management software and IBM PC DOS on each workstation. Officewriter word processing software is used as well.

Application Software: The application software is written in Information Builders PC-FOCUS and consists of two main modules.

- Appointment Scheduling Module - provides tracking over 2000 student/faculty appointments per quarter. This module also provides about 13 management reports related to flexible learning course support.
- Administrative Support Module - accepts extracted IBM mainframe course data from the CDAS Student system and produces welcome letters, prompting and other types of corre-

spondence to students, tracks incomplete student information, and generates various types of mailing labels and other miscellaneous documents for tracking and supporting these courses.

Library System

Description: The library's automated system uses a Convergent Technology microcomputer. Presently, it is able to support the hardware being used within the library, listed below. The first two modules of the system were installed in 1989; the most recent module, the materials booking module, was installed in 1991.

Hardware Resources:

- 1 - Unisys CPU/Convergent Expansion Box
- 64 - ports.
- 55 - Wyse WY-50M terminals.
- 7 - laser scanners
- 24 - terminal printers
- 2 - system printer for reports and notices.
- 3 - modems
- 1 - portable laser reader for inventory
- 2 - light pens

System Software: The INNOPAC system is a "turnkey" system both for system and application software. The UNIX System V - based system, as well as application code, is developed, maintained and enhanced by the vendor, Innovative Interfaces, Inc. System changes are applied either by magnetic tape supplied by the vendor or via vendor dial-up access directly into the library system from their location.

Application Software: The application software consists of six (6) modules:

- On-line Catalog Module - capable of creating, updating, retrieving, and displaying online Learning Resource Center holdings. This includes title, author, subject, classification number, and key-word-in-title.
- Circulation Control Module - provides for automated check-out, check-in of all LRC materials, as well as for printing of overdue notices and multiple statistical reports.
- Serials and Acquisitions Module - provides for online ordering, receiving, check-in, claiming, billing, and cancelling capabilities for monographs and serials.
- Reserve Module - provides for maintaining materials placed on "reserve" for instructors, as well as for check-in and check-out of these materials.
- Materials Booking Module - capable of creating, updating, retrieving, and displaying online the LRC's collection of AV equipment and materials. As a result, it allows for the booking and scheduling of this equipment and these materials. This module is interfaced with the online catalog module and the circulation module.
- Inventory Control Module - allows for inventorying the collection of materials by using a hand-held scanner to read barcodes which identifies missing items checked out, and misshelved items.

CD-ROM Network

Description: The Learning Resource Center also has a number of databases which are on CD-ROM's. A CD-ROM can hold the equivalent of over 400,000 pages of information on a disk identical to the compact disk on which music is recorded. Students and faculty can search for information stored in a CD-ROM database simply by keying in a few commands using a micro-computer.

Hardware Resources: The CD-ROM network shares the local area network file server with the Learning Resources Computer Resource Lab. It consists of ten workstations which are only used for CD-ROM access and a CD-ROM Server with 16 CD-ROM drives attached.

System Software: The network is running Novel Netware and the CD-ROM Server is running Opti-Net CD-ROM multiple user software which allows multiple users to access an individual CD-ROM. The exact number of simultaneous users varies for each CD-ROM title and is dependent on the license agreement for that CD-ROM.

Application Software: There are several databases that are available to faculty, staff and students. The following is a list of the CD-ROM databases to which the LRC presently subscribes.

- Books in Print Plus with Book Reviews - Citations to the complete *Books in Print* including *Author*, *Title* and *Subject Guide*; *Forthcoming Books in Print*; *Supplement*; and *Children's Books in Print*. Includes full text reviews from several major book reviewing sources. Updated six times a year.
- Business Index on InfoTrac - An index to over 800 business, management, and trade journals and newspaper. Contains abstracts for approximately 150 major management and computer journals. Updated monthly, the index covers the last four years.
- CD Coreworks - Provides complete indexing to poems in anthologies and collections, essays, plays, and short stories.
- Compact Disclosure - Contains detailed profiles of over 12,000 public companies whose securities are traded on the New York Stock Exchange, American Stock Exchange, NASDAQ, and Over-the-Counter. Information has been extracted from reports which publicly-held companies must file with the U.S. Securities and Exchange Commission. Updated quarterly.
- ERIC - A bibliographic database covering the journal and technical literature in the field of education. Includes both reference and abstracts to documents, e.g. conference proceedings, teaching materials, and to journal articles (775 periodicals). Covers 1966 to the present; updated quarterly.
- Expanded Academic Index on InfoTrac - A broad interdisciplinary index with references to over 950 journals and magazines in the humanities, social sciences, and non-technical general science subject areas. Most references have an attached abstract. Updated monthly, the database covers the last four years.
- Information Finder - The full text of the *World Book Encyclopedia* on CD-ROM.
- Nursing and Allied Health - Provides bibliographic access to virtually all English-language nursing journals, publications of the American Nurses' Association and the National League for Nursing, and primary journals in more than a dozen allied health disciplines. Also includes references to selected articles from approximately 3200 biomedical journals. Coverage is from 1983 to the present; updated bimonthly.
- PsycLIT - Contains citations with abstracts to over 1,300 journals in psychology and the behavioral sciences. Topics covered include all aspects of psychology, as well as the behavioral aspects of education, medicine, sociology, law, and management. Coverage is from 1974 to the present; updated quarterly.
- Sociofile - Provides an index and abstracts to the literature of sociology from 1,800 journals published worldwide. Includes citations to relevant dissertations as well as the Social Planning

Policy and Development Abstracts database. Coverage is from 1974 to the present; updated three times a year.

Microcomputing Terminal and Networking Resources

The total number of microcomputing and terminal computer devices in use at the institution is quite large and growing steadily. The following figure indicates that there are around 1571 computer terminals and microcomputers in current operation at the College of DuPage. This total includes about 1300 microcomputers, 140 IBM mainframe terminals, 274 other devices including 55 connected to the LRC library system.

The following tables shows a list of types of workstations by department. Column F shows the number of microcomputers from column A, B, and C that are connected to the IBM mainframe.

50

MICROCOMPUTER AND TERMINAL RESOURCES							
DEPARTMENTS	TYPES OF WORKSTATIONS*						TOTAL
	A	B	C	D	E	F	
PRESIDENTS							
Office of President	2		1			2	3
Auditor							
CENTRAL CAMPUS							
Office of Provost	2		1	3		1	6
Instruction	7			1		2	8
Business & Services	71		31	2	6	7	110
Communications	5					5	5
Humanities	12	1	4	2		5	19
Natural Sciences	10	4	4	3		4	21
Occupational & Vocational Education	40	16	22		12	4	90
Social & Behavioral Sciences	5	3				3	8
Learning Resource Center	51	20	7	2	66	2	146
Student Affairs	18			4		6	22
OPEN CAMPUS							
Office of Provost	2		1	9		6	12
Academic Alternatives	8					2	8
Instructional Alternatives	21	8	6	2	21	1	58
Instructional Design	11	4	4	1	18	3	38
Testing & Open Campus Services	26						26
Business & Professional Institute	71	1	3	2		4	77
Instructional Affairs & Community Education	29			1		2	30
Community Education	20	18					38
Westmont Regional Center	39			2	2		44
Glendale Regional Center	4	1	3	1		1	9
Davea Regional Center	55			1		2	56
Lombard Regional Center	2		2	2		2	6
Naperville Regional Center	48			1	3	7	54
ADMINISTRATIVE AFFAIRS							
Office of Vice President	2		1			2	3
Auxiliary Enterprises	14		1				15
Campus Services	4			1		4	5
Financial Affairs	17			21		8	38
Human Resources	8			3		4	11
Public Safety	3			1		1	4
Purchasing	2			3		2	5
PLANNING & INFORMATION							
Office of Vice President	1		1	1		1	3
Admissions, Registration & Records	3			32		2	35
Computing and Information Systems	95	3	17	33		18	148
Faculty Suites	51	10					61
Seaton Computing Center	229	47	34			37	310
Grants	3		1			2	4
Research & Planning	5			1		5	6
EXTERNAL AFFAIRS							
Office of Vice President	1		1			1	2
Campus & Community Events	1			1		1	2
Development	2						2
Public Information/Media Production	10	9		4		3	23
TOTAL	1,010	146	147	140	128	169	1,571
*A-IBM Microcomputers (PC, XT, AT, 3270PC, 3270AT, PS/2) B-Apple, Macintosh (Apple IIe, MAC-SE, MAC II) C-Other Microcomputers (Zenith Laptop, AT&T, TRS, HP, etc.) D-IBM Terminals (3163, 3178, 3179, 3180, 3278, 3279) E-Other Terminals (INNOPAC, PLATO) F-Mainframe attached Microcomputers Total - Total Number of Department Workstations - Does Not Include Column F.							

Figure 2. Microcomputer and Terminal Resources

Administrative Users

There are about 400 microcomputers in use at the institution for administrative functions. About 170 are attached to the IBM 9121 mainframe and can emulate 3270 type terminals.

These microcomputers are used for word processing, spreadsheet calculating, small specialized database management, graphics, and communication functions. The main application is in the area of word processing, with spreadsheet processing a distant second in importance and frequency. The computers with mainframe access can emulate 3270 type terminals. If they are equipped with fixed disks and appropriate communications software, they can download mainframe data for use within the microcomputer. Most of the microcomputer systems listed have printers available, many with letter quality capabilities.

Faculty Users

The Academic Computing process depends greatly on the involvement of faculty who wish to use computers in class instruction. Providing faculty with access to computer resources is a necessary step in promoting computer literacy at the college and providing the tools for the evaluation and development of new computer applications. Faculty access to computers is also necessary if they are to support student use of these applications. Computers may diminish the time spent in the management of the instructional process, freeing up more time for interaction with students. Lastly, a computer network may support communication between students and faculty and allow for the exchange of information between faculty and computer support areas.

Faculty have access to microcomputers in one of several ways:

- Shared use of computers in the faculty suites located throughout the campus
- Shared use of IBM PC or Apple microcomputers located near or in the Divisional offices
- Shared use of microcomputers found in an instructional area and used primarily for instruction
- Shared use of microcomputers found in computer labs including the Seaton Computing Center
- Shared use of six portable microcomputers loaned out through the Learning Resource Center

There are presently 61 microcomputers in faculty suites that were purchased through the faculty suite computer program. The Academic Computing Planning and Advisory Committee (ACPAC) made up of faculty members from all areas of the college allocated the computers based on grant proposals submitted by the faculty members in each suite. The computers are available for use by any faculty member, not just the ones in a suite where a computer is installed.

Student Users

There are 23 academic labs at the institution for student use. The number of workstations in these labs that are dedicated to instructional purposes is approximately 858. See Computing Lab Facilities section below for more detailed information on these labs.

Computing and Information Systems Training Center

Computing and Information Systems has a training facility located in SRC2003A providing administrative and academic users with a wide variety of training. Approximately 40 two or three day short courses are provided in word processing, database, spreadsheet, graphics and miscellaneous other topics including mainframe applications quarterly. About 250 individuals attend training class per quarter. The Training Center consists of the following equipment:

- 6 - IBM PS/2 Model 55SX Microcomputers
w/3270 mainframe access
- 1 - Hewlett Packard Laserjet Printer
- 1 - IBM Quietwriter III Printer

These computers will be networked in the next year and hardware upgrades necessary to provide an adequate platform for multi-media applications will be provided. Other possible improvements include the addition of an additional microcomputer and an overhead projector.

Microcomputer Local Area Networks

Local Area Networks (LAN's) are becoming an increasingly important technology at the College of DuPage. A LAN is a hardware and software system consisting of a number of microcomputers linked together via various types of cable allowing the sharing of computer resources and information.

The main components of a local area network consist of the microcomputers themselves, the media (cables) to connect them, interface cards that are inserted in each microcomputer on the network, and special software to manage resources, communications, security, error correction, and other functions necessary to allow multiple users to use the network. These LAN's can operate independently of the mainframe computer or can be designed to communicate with the mainframe via single or multiple network points, known as "Gateways."

There are about 15 local area networks in current operation at the college. These include LattisNet/Ethernet academic networks in the Seaton Computing Center, Naperville and Westmont Regional Centers. A number of smaller IBM Token Ring Networks exist including the Career Placement Network, Academic Alternatives Administrative Network (ALAN), Staff Services and Computing and Information's Administrative Network. In addition there are Ethernet Networks in the Testing Lab and Open Campus Computer Labs. See Appendix K for a more detailed description of these networks.

The following describes the major functional groups of users of computer equipment at the college. These groups include Administrative, Faculty, and Student users.

Student Computing Lab Facilities

Student Computing lab facilities include all of those systems which are used by students as a part of the instructional process, or by some faculty as an aid to the management of instruction. The following is a list of computer labs and building and room numbers in parentheses that are used for instruction.

Following is a table of computer labs on campus. The table shows the name of the lab, location, building on campus where the lab is located, the room number, and the number of student workstations.

STUDENT COMPUTER RESOURCE SUMMARY				
Description	Location	Building	Room	No. Workstations
BPI Microcomputer Lab	Open Campus	K	104	36
Business & Service Lab	Central Campus	IC	1108	26
Computer Graphics Lab	Central Campus	IC	1115	12
Davea Computer Lab	Addison	DAVEA	103	51
Desktop Publishing Lab	Central Campus	IC	1113	16
Electro-Mechanical Technology Lab	Central Campus	IC		11
Glendale Heights Learning Center Lab	Glendale Heights			6
Information/Word Processing Lab	Central Campus	IC	3S	75
LRC Microcomputer Workroom	Central Campus	SRC	3021	41
Manufacturing Technology Computer Lab	Central Campus	IC	0032	15
Microcomputer Lab	Open Campus	K	123	55
Naperville Regional Computer Lab	Naperville			31
Nursing Lab	Central Campus	IC	2E	12
Open Campus Apple Lab	Open Campus	K	137	18
Open Campus Micro Lab	Open Campus	OCC	125	24
Photography Lab	Central Campus	AC	278	1
PLATO Lab	Central Campus	SRC	3023	15
Psychology Computer Lab	Central Campus	IC	1Q	2
Seaton Seaton Computing Center	Seaton Center	SCC		308
Skills Center Computer Lab	Central Campus	IC	3M	11
Testing Lab	Central Campus	SRC	S2022	22
Travel and Tourism Computer Lab	Central Campus	IC	2003	20
Westmont Computer Lab	Westmont			31
Total Student Workstations				839

AC - Arts Center	K - K Building
IC - Instructional Center	OCC - Open Campus Center
SCC - Seaton Computing Center	SRC - Student Resource Center

Figure 3. Student Computer Resource Summary

Following is a detailed description of each lab, type of lab whether a classroom lab or open lab, the types of hardware, who manages the facility and the staffing and the hours of operation. Appendix L is a campus map showing all the buildings on campus.

BPI Microcomputer Labs

Type: Classroom Lab

Description: Three BPI Microcomputer Labs support Continuing Education courses offered in the evening (6:30-9:00) and on Saturdays (9:00-4:00). The labs support scheduled classroom instruction and open lab use by individuals.

Introductory and advance courses are offered through Continuing Education on business and programming applications which include word processing (WordPerfect, MultiMate, WordStar 2000); BASIC programming, Database (dBASE III), Integrated software (Lotus 1-2-3), spreadsheets (Visicalc), networking, mainframe interface, and CAD/CAM. These courses are open to the business public as well as individuals from the community.

Management: BPI Microcomputer Labs are managed by the Business and Professional Institute. Each BPI Microcomputer Lab is staffed by one lab aide during class sessions; student use is also supported by their instructor.

Operational Hours: 60 hours per week

Hardware:

- 10 - IBM PC's in Room K104
- 13 - IBM PS/2 55SX in Room K104
- 13 - IBM PS/2 55SX in K106
- 2 - Laser Printers
- 3 - Overhead Systems

Business & Services (IC1108 Lab)

Type: Classroom Lab

Description: This lab currently is used to teach four classes primarily: Lotus 1-2-3, and dBase (CIS 131, 132, 136, 137)

Management: IC1108 is managed by Business and Services academic instructors during scheduled classroom time. Computing and Information Systems provides lab aides and hardware maintenance on a scheduled and as needed basis.

Operational Hours: 64 hours per week

Hardware:

- 11 - IBM PS/2 55SX
- 10 - AT & T's 6300
- 5 - IBM PC's

Computer Graphics/Fashion Design Lab

Type: Classroom/Open Lab

Description: The Computer Graphics Lab is currently being used by students in computer graphics, advertising design, illustrations and fashion design. The computers are specially configured IBM AT's compatibles and Compaq computers running Lumena graphics software which allows the students to manipulate video images. The Fashion Design software (PDS) is used for training students in state-of-the-art pattern design, textile design, garment design and fashion illustration.

Management: The Computer Graphics Lab is managed by the Commercial Art area. Support is provided to students by their instructors.

Operational Hours: 49 hours per week

Hardware:

- 8 - IBM AT Compatibles
- 4 - Compaq 386
- 1 - Matrix Film Recorder
- 1 - Color Printer
- 1 - Plotter

Davea Regional Computing Lab

Type: Classroom/Open Lab

Description: The Davea Regional Computing Lab is used both as an open lab and a classroom lab. This lab supports Computer Information Systems, Office Careers, and Accounting classes offered by Open Campus. Students from Central Campus are also welcome to use the facility. Computer Information Systems classes at DAVEA are using Turbo Pascal, Tripac and BASIC. Lotus 1-2-3 is being used by the Accounting classes while the Office Careers classes are using WordPerfect.

Management: The Davea Regional Computing Lab is managed by North Regional Office. Support in the use of the lab is provided to students by North Regional Office staff or a student aide. This lab will be networked and expanded in 1992 as listed below. Technical support will be provided by Computing and Information Systems.

Operational Hours: 56 hours per week

Hardware:

- 50 - IBM PS/2 Model 50
- 1 - IBM-XT
- 15 - ProPrinters
 - Everex 386 File Server
 - Novell/Synoptics LattisNet Local Area Network

Desktop Publishing Lab

Type: Classroom/Open Lab (IC1111)

Description: The Desktop Publishing Lab is currently being used by students enrolled in Graphic Arts 182, 183, 186, and 280. These students use MacWrite, Microsoft Word, PageMaker, MacDraw and Full Paint software.

Management: The Graphic Arts Computer Lab is managed by the Graphic Arts area. Support is provided to students by their instructor and one part-time student worker.

Operational Hours: 51 hours per week

Hardware:

- 16 - Macintosh
- 3 - Table Top Scanner
- 2 - LaserWriter

Electro-Mechanical Technology Lab

Type: Classroom/Open Lab

Description: The Electro-Mechanical Lab is used by faculty and students both the classroom and open lab environment. These computers/programmable controllers use various manufacturer's software programs to provide the "hands-on" learning situations in the robotics, process control, instrumentation, mechanical maintenance, and programmable controller courses.

Management: The Electro-Mechanical Technology Lab is managed by the Technology area. Support is provided to students by their instructor.

Operational Hours: 74 hours per week

Hardware:

- 11 - PCs shared with Manufacturing Technology
- 4 - Allen-Bradley PLC-2
- 6 - Mitsubishi PLCs
- 4 - Square D PLCs
- 4 - General Electric Fanuc PLCs
- 4 - AllenBradley SLC-150's
- 1 - Toshiba PLC
- 1 - Gould-Modicon PLC
- 1 - Smart Screen process simulator/emulator

Glendale Heights Learning Center Lab

Type: Classroom/Open Lab

Description: The Glendale Heights Learning Center Lab is used by Glendale Heights Learning Center for their Older Adult Institute Program, non-credit classes, and credit courses.

Management: The Open Campus Micro Lab is managed by the Open Campus. Support is provided to students by their instructor.

Hardware:

- 2 - Apple IIe
- 2 - HP PC
- 2 - IBM PS/2
- 4 - Printers

Information/Word Processing Lab

Type: Classroom/Open Lab

Description: This lab consists mainly of IBM PS/2 microcomputers. The IBM PS/2 microcomputers are used primarily by Office Careers students to complete class assignments for beginning and advanced classes in word processing. However, JTPA students use the equipment for training in word processing as well. Software used includes WordPerfect, WordStar, MultiMate, PFS: First Choice, and DisplayWrite; all of these are the latest software releases. The IBM PS/2's are also used by Office Careers students who are taking OFC 100, Keyboarding Basics. The students use a software package designed to drill the student on speed and accuracy in typing.

The Wang PC's have the capability to emulate Wang OIS 140 System workstations as well as emulate IBM PC's. The Wang PC's are used in all the microcomputer software classes.

One IBM PC with a 1200 baud modem and one with a 2400 baud modem are being used to send and receive documents from sister community colleges, connect to College of DuPage's electronic card catalog, connect to public databases and, use electronic mail.

Management: The Office Careers Lab is managed by the Office Careers area with Business and Services. One full-time lab supervisor and several teaching assistants circulate throughout the lab during operating hours to assist students when necessary. A teaching assistant is in the lab at all times.

Operational Hours: 79 hours per week

Hardware:

- 26 - IBM PS/2 55SX
- 4 - IBM PC's
- 17 - IBM PS/2-30's
- 18 - IBM PS/2-50Z's
- 10 - Wang Microcomputers
- 5 - Proprinters
- 2 - Internal Modems

LRC Microcomputer Workroom

Type: Open Lab

Description: The LRC Microcomputer Workroom supports all areas of instruction as a teaching or learning aid. The LRC Microcomputer Workroom is divided into two sections. The first sec-

tion contains 25 IBM microcomputers which are connected to a local area network. The second section contains six IBM PC's, five Apple IIe's and five Macintosh microcomputers. The PS/2's are connected to the LAN. This lab is also a point of distribution for microcomputers and/or portable projection systems on loan to instructors as well as six laptops for home use.

Management: The LRC Microcomputer Workroom is managed through the Learning Resource Center. The area is managed by a full-time lab supervisor and assisted by part-time lab aides.

Operational Hours: 76 hours per week.

Hardware:

- 26 - IBM PS/2 Mod 55SX
- 5 - IBM PC 5150
- 1 - Macintosh II
- 2 - Macintosh CI
- 1 - Macintosh SE
- 1 - Macintosh IICx
- 5 - Apple IIe
- 1 - HP LaserJet III
- 1 - Apple LaserWriter Plus

Manufacturing Technology Computer Lab

Type: Classroom/Open Lab

Description: The Manufacturing Technology Computer Lab is used by faculty and students in a classroom environment and an open lab environment. These machines use the XL/NC, Tempo, and PDS software to aid students in learning about control, robotics, CAM, Anvil, and Cadkey.

Management: The Manufacturing Technology Computer Lab is managed by the Technology area. Support in the use of the lab is provided to students by their instructor.

Operational Hours: 74 hours per week

Hardware:

- 15 - PC's

Microcomputer Lab - Open Campus

Type: Classroom/Open Lab

Description: The lab is actually located in two contiguous rooms. One is a dedicated open lab and the other is used for either a classroom lab or an open lab when classes are not scheduled. The two areas are divided by the lab aides workroom. There are 36 PC's on the classroom side and 19 PC's on the open lab side. All computers are connected to printers via switchboxes. All the software available on central campus is available in this lab. A projection device is attached to the instructor's workstation in the front of the classroom to allow the instructor to project his monitor display to a projection screen.

Management: The Microcomputer classroom/lab is managed by the Academic Lab Supervisor in Computing and Information Systems. The K123 lab is staffed with at least one part-time student worker at all times the lab is open.

Operational Hours: 83.0 hours per week

Hardware:

- 55 - IBM PC's

- 6 - Epson MX80 Printers
- 11 - IBM Proprinters

Naperville Regional Center Computer Lab

Type: Classroom/Open Lab

Description: The Naperville Regional Center Computer Lab is used both as an open lab and a classroom lab. This lab supports Computer Information Systems, Open Campus computer classes and the Kids on Campus program offered by the Open Campus. These classes are using Lotus 1-2-3, Tripac, Turbo Pascal, dBASE III, WordPerfect, and Symphony.

Management: The Naperville Regional Center Computer Lab is managed by Southwest Regional Office. Support in the use of the lab is provided to students by staff or a student lab aide. Technical network support is provided by Computing and Information Systems.

Operational Hours: Approximately 80 hours per week

Hardware:

- 31 - IBM PS/2 Microcomputers
- 8 - IBM Proprinters
- Novell/Synoptics Lattisnet Local Area Network
- Everex 386 File Server

Nursing Lab

Type: Classroom/Open Lab

Description: The Nursing Lab is used in nursing courses to provide students with computer aided instruction to reinforce and supplement their class work.

Management: The Nursing Lab is managed by the Nursing program. Support is provided to students by their instructors.

Hardware:

- 2 - PLATO Terminals
- 3 - IBM PC
- 1 - IBM PS/2
- 6 - Interactive Video Disk Workstations
- 4 - Printers

Open Campus Apple Lab

Type: Classroom Lab

Description: The Open Campus Apple Lab is used by Open Campus for their Kids on Campus program, Older Adult Institute program, and their non-credit classes. This lab uses Appleworks, Spinnaker, MECC, and public domain software.

Management: The Open Campus Apple Lab is managed by Open Campus. Support in the use of the lab is provided to students by their instructors.

Operational Hours: 32 hours per week

Hardware:

- 18 - Apple IIGS's

5 - Apple Image Writer Printers

Open Campus Micro Lab

Type: Classroom Lab

Description: The Open Campus Micro Lab is used by Open Campus for their Adult Institute program, non-credit classes, Kids on campus, and Teen program.

Management: The Open Campus Micro Lab is managed by the Open Campus. Support is provided to students by their instructor. Technical network support is provided by Computing and Information Systems.

Hardware:

- 24 - IBM PS/2 Model 50
- 8 - Proprinters
 - Novell/Ethernet Local Area Network
 - Everex 386 Network Server

Photography Lab

Type: Classroom Lab

Description: The Photography Lab is used by photography courses to integrate still video into the area of image enhancement and modification.

Management: The Photography Lab is managed by the Photography program. Support is provided to students by their instructor.

Hardware:

- 1 - Amiga 1000 with hard disk

PLATO Lab

Type: Open Lab

Description: Students make use of the PLATO system through ten terminals located in a small lab facility in the Learning Resource Center (SRC 3023) and a total of five terminals at the Westmont and Naperville Regional Centers. Faculty have access to these terminals plus one additional terminal located in the Instructional Design area. The PLATO lab is used by students on an individual basis, but is also available for classroom instruction.

The power in the PLATO system, as an instructional aid, lies in the extensive software collection which is considered to be some of the best computer assisted instruction available. PLATO offers computer-based support materials in all areas of instruction and most of these materials have been developed and improved upon over the last ten years by instructors at the University of Illinois. In a sense PLATO represents tried and tested computerized instruction which is ready to use at the cost of the hardware connection.

Areas of instruction which use the PLATO system include: Accounting, Anthropology, Biology, Computer Information Systems, Chemistry, English, Electronics, Economics, Mathematics, English as a Second Language, Nursing, Travel/Tourism, Religious Studies, Sociology, Music, First Aid, Foreign Languages, Government, Physics, Automotive Technology, Psychology, Radiology and the FACS program. The PLATO system also contains an authoring system that may be used by Instructional Design and/or faculty to develop new applications.

Instructional Design is responsible for contractual agreements, equipment purchase, installation and repair of terminals, the distribution of materials which describe PLATO software holdings, man-

agement of student accounts, faculty training in the use of the PLATO system and student support in the use of PLATO programs. PLATO access is provided through University of Illinois using two 8 port multiplexers with dedicated circuits.

Management: The PLATO system is managed by a full-time faculty member in the Instructional Design area. Student use of PLATO is currently not supported by a lab aide stationed in the PLATO Lab.

Operational Hours: 76 hours per week

Hardware:

- PLATO Terminals
- 2 - Multiplexers

Psychology Computer Lab

Type: Classroom/Open Lab

Description: The Psychology Computer Lab is used currently by Psychology 180 classes. This lab will increase in usage as Psychology 100 classes start to use computers. Simulations and demonstration in an open environment are conducted.

Management: The Psychology Computer Lab is managed by Social and Behavioral Sciences. Support in the use of the lab is provided to students by their instructors.

Operational Hours: Open during scheduled classes only

Hardware:

- 1 - IBM PC
- Mac LC

Seaton Computing Center

Description: The facility provides seven computing labs/classrooms that used by all academic areas of the college. One lab/classroom is dedicated to CADD, Computer Assisted Drafting and Design. Four of the rooms are used primarily as classrooms for instructors who need computers for teaching. The other two rooms are used as open labs for students. When the classrooms are not scheduled for classes and open lab space is needed, the classrooms may be used for open labs for students.

Each classroom has 37 workstations and nine printers. The CADD lab contains 24 workstations, three of the classrooms have IBM PS/2 55SX's installed, and the fourth has Apple Macintosh SE's. One open lab contains 60 PS/2 55SX workstations with 12 printers. The other open lab has six CADD workstations, eight Macintoshes, six Interactive Video Disk workstations, and 34 IBM PS/2 55SX's.

All the workstations are networked together using token ring and ethernet protocols. The networks extends to the IBM mainframe, UNIX RS/6000 computer and will eventually connect to the LRC Library System and faculty suites. Electronic mail between faculty and students will be provided. Students will be able to access the library's online catalog and the IBM mainframe from any workstation within the facility.

A network management system provides security against illegal access, information about students usage, and central distribution of software to students.

A distribution center is centrally located in the facility. The distribution center provides student consulting support, documentation and high quality laser printouts. Lab aides are on duty during

operational hours to distribute the documentation and printouts, assist students with problems, and provide security and management of the facility.

Some of the benefits of the center include:

- The facility provides additional computer classroom and open computer lab space for Central and Open Campus.
- The facility is in close proximity to existing high technology programs will serve the high technology needs of the industries located in the DuPage corridor.
- The facility provides expanded access to computer resources and more efficient scheduling of class usage.
- The facility provides one location where students from all instructional areas can obtain support, information, and software.
- Centralized hardware and software makes possible the sharing of equipment and programs. This in turn lowers the cost of materials and provides easier management of computer usage and fewer support staff than would be needed for decentralized multiple non networked computing resources.
- The facility provides two faculty work areas for faculty to prepare lessons, explore new applications, and have access to hardware and software for specialized applications such as desktop publishing, postscript printing, and text and image scanning.

Management: The Scaton Computing Center (SCC) is managed by Computing and Information Systems. The Scaton Computing Center is staffed with part-time lab aides and a lab supervisor.

Operational Hours: 84 hours per week.

Hardware

- 45 - Macintosh SE's
- 30 - CADD Workstations - 386 Based
- 8 - Interactive Video Disk Workstations
- 205 - IBM PS/2 55SX

Skills Center Computer Lab

Type: Open Lab

Description: The Skills Center Computer Lab allows remedial, developmental, and literacy students to engage in computer-delivered basic skills instruction, both on campus and in neighborhood Learning Centers. Instructors and Instructional Aides assist students in working with various programs which are applicable to skill development objectives. The labs are open during the same hours as the Skill Center that houses them.

Management: Skills Center Labs are managed by Instructional Alternatives. The lab is staffed by Instructional Aides.

Operational Hours: 62 hours per week

Hardware:

- 4 - HP PC's
- 2 - PLATO Terminals
- 4 - Apple IIe's
- 1 - Apple II Plus

Testing Lab

Type: Testing Center

Description:: This lab was designed and is used to provide a site to administer computerized pre-course testing using College Placement Test (CPT) software and the PAR general testing software. Precourse testing has been the major use to date with other forms of testing to be added in a phased approach.

Management:: The lab is managed by Testing Office staff with technical assistance provided by Academic Alternatives and Computing and Information staff.

Operational Hours:: 60 hours per week.

Hardware:

- 20 - IBM PS/2 Model 30
- 2 - IBM PS/2 Model 55
- 1 - Scantron Model 8400
- 1 - IBM PS/2 Model 70 File Server
- 1 - Novell/Ethernet Local Area Network

Travel and Tourism Computer Lab

Type: Classroom Lab

Description: The Travel and Tourism Lab is used by Travel and Tourism faculty and students as a classroom environment. Students in Travel and Tourism use a software program written at the College of DuPage to assist them in learning ticketing, geography, and the Apollo and Sabre Reservation Systems. The Travel and Tourism Lab is also being used for Computer Information Systems classes until the Instructional Computing Center opens.

Management: The Travel and Tourism Computer Lab is managed by the Travel and Tourism area. Support in the use of the lab is provided to students by their instructors.

Operational Hours: Open during scheduled classes only

Hardware:

- 20 - IBM PC's

Westmont Regional Center Computer Lab

Type:: Classroom/Open Lab

Description:: The Westmont Regional Center Computer Lab is used as both an open lab and a classroom lab. The lab supports a wide range of courses offered by both Open and Central Campus including Lotus 1-2-3, dBase IV, First Choice, and Turbo Pascal.

Management:: The Westmont Center Computer Lab is managed by the Open Campus Regional Center staff. Support in the use of the lab is provided by student lab aides and staff. Technical network support is provided by Computing and Information Systems.

Operational Hours:: Approximately 80 hours per week subject to some variation or a quarterly basis.

Hardware:

- 31 - IBM PS/2 Model 55SX

- 8 - IBM Proprinters
- Novell/Synoptics Local Area Network
- Exerex 386 File Server

Academic Software Resources

Educational software at the college belongs in the following categories:

- Computer Assisted Instruction (i.e., PLATO, Interactive Chemistry Series)
Computer Assisted Instruction (CAI) is instruction which is delivered by the computer.
- Computer Managed Instruction (i.e., ALAN)
Computer Managed Instruction (CMI) is instruction in which the computer assists in the management of the instructional process by managing records such as a gradebook, or sequences the instruction based on a student's progress.
- Computer Emulation Programs (i.e., Sabre, Restaurant Management Simulation, Manufacturing Control Simulation, Chemistry Interactive Video Disk).
These are programs which emulate, or imitate, large programs which would be either impractical, too expensive, or dangerous to operate in a classroom.
- Statistical Programs (i.e., SPSS/PC, Microstat)
These are programs which store, tabulate and analyze numerical data.
- Mainframe Languages (i.e., COBOL, Assembler)
These are the languages used to write programs which run on mainframe computers.
- Operating Systems and Editors (i.e., VSE, MUSIC, UNIX, DOS)
These are a group of programs used to control the CPU and various devices which make up a computer system. An editor is a text processing program used for writing programs or formatting simple documents.
- Microcomputer Languages (i.e., C Language, FORTRAN, Pascal)
These are the languages used to write programs which run on microcomputers.
- Fourth Generation Language (i.e., Application System, PC Focus)
These are systems that allow programs to be written in a shorter period of time than conventional programming languages.
- Communications Utilities (i.e., Crosstalk, Procomm Plus)
These are programs which allow the computer to communicate with other computers using the telephone system or other connections.
- Authoring Systems (i.e., Quest, IconAuthor Toolbook)
These are programs which allow instructors to design their own CAI, and in some cases, CMI software without having to learn a programming language.
- General Purpose Programs (i.e., word processing, spreadsheet, database utilities)
These are commercial programs which are widely used in academia and industry.
- Integrated Software (i.e., Framework, First Choice)
These are commercial programs which combine word processing, spreadsheet, and database programs into an integrated package.

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- Microcomputer Graphics (i.e., Excel, Harvard Graphics, Power Point, LumenA)
These are programs which allow the user to create sophisticated graphics from raw numerical data.
- Computer Aided Design (i.e., Microstation, AutoCad)
These are programs which allow the user to do drafting on a microcomputer.
- Computer Aided Manufacturing (i.e., XL/NC)
These are programs which control automated manufacturing equipment.
- Online Databases (i.e., DIALOG, LRC Periodical System, CD-ROM)
These are very large databases on various topics which are accessed through sophisticated programs to allow the user to do searches in minutes which may have taken days or weeks to accomplish using traditional methods.
- Graphical User Interface Programs, (Macintosh based graphics applications, Microsoft Windows based software (IBM)
- Desktop Publishing Package (Aldus PageMaker, QuarkXpress, and other)
- Multi Media Applications (PODIUM and other presentation systems)

Current Environment

ACADEMIC COMPUTING

Overview

This section provides information dealing with academic computing. Provided is a definition of academic computing, what are the critical issues that are related to academic computing from a student and faculty perspective and what are the major goals of academic computing for FY93-95. Also included is the current academic computer usage by each division, projected usage to meet the proposed recommendations and financial costs for FY93-95.

Definition

Academic Computing includes all of those activities which are integral to or related to student instruction in computer-related disciplines, or other instruction which relies on computers. This includes all computing functions which either assist instructors in the development or maintenance of course materials or facilitate students in the learning process. Academic Computing involves all of those activities which support the use of computers such as the maintenance of hardware, the integration of software into instruction, the preparation of support materials, personal consulting or problem solving, and the management of lab facilities. Academic Computing also involves those activities which promote growth in the use of computers such as the consideration, selection, and review of hardware and software; training for computer literacy; computer planning; and the development of new applications.

Issues

There are a number of specific issues which must be addressed in order to ensure that the use of computers will continue to grow and that computers will have a positive impact on students at the college.

- That faculty have sufficient access to computer equipment.
- That student use of lab facilities or systems does not exceed present resources.
- That purchased hardware and software is reviewed and meets criteria concerning cost effectiveness, compatibility, feasibility, and justification for purchase.
- That computer hardware and software is maintained and upgraded to keep pace with new computer technology as appropriate.
- That open access computer facilities be centralized in order to streamline their management and improve the support provided.
- That faculty and students have sufficient access to computer software.
- That all computer users have a clear understanding of the college's position on the software copyright law.
- That the distribution of monies for computer software addresses the needs of all faculty who are interested in using computers and supports the direction for computing.

- That faculty receive sufficient support in using computers. This involves identifying areas of needed support and monitoring the level of support provided.
- That students receive sufficient support in using computers.
- That staff support personnel keep pace with the growth in the use of appropriate computer technologies.
- That faculty receive support in the identification, development and integration of new applications into the instructional process.
- That students are provided with instructions for each computer application that is made available to them.
- That faculty are provided with information on new applications or the options they have in selecting a computer system for their students to use.
- That faculty are provided with incentive to become computer literate.
- That faculty are provided with incentive to research and develop new computer applications.
- That faculty are provided with incentive to effectively integrate the use of computers into instruction.

The Academic Computing Departmental Survey has provided information which allows for the projection of computing needs over the next three years and also how hardware and software resources should grow to support those needs. This section provides a brief description of the major instructional divisions for Central and Open Campus, and the level of computer usage for these areas as identified in the survey.

Growth projections for Central and Open Campus are presented in terms of the cumulative number of students and contact hours for each fall quarter starting in 1992 and continuing through 1995. Also included is a written description of those areas where growth is expected to occur. This includes a description of new application systems that may be used over the next three years. Projections for the number of additional computer stations for classroom labs and open labs were also determined for the college.

Faculty access to computer resources has also been evaluated and compared to the number of computers which are needed over the next three years.

Goals

Each academic department provided a list of goals applicable to their area. Those goals were summarized to provide institutional wide goals that apply to all of academic computing.

The goals of Academic Computing for FY93-95 are:

- To support the continued exploration of computing technology in order to enhance the instructional capabilities of the faculty.
- To facilitate the teaching-learning process by providing access to current technology to both faculty and students.
- To support efforts to provide computer training for faculty.
- To prepare students for the future by acquiring computer literacy.
- To provide critical thinking tools to improve the problem-solving capabilities of students.

Below is a description of each area of instruction for Central and Open Campus followed by a description of current computer usage, seat count of the number of students using computers for fall FY92, the projected cumulative increase for fall FY93 through fall FY95, and a summary of the new application systems that may be used over the next three years.

Student Usage

Central Campus

A description of each of the six divisions of Central Campus is included here along with a summary of instructional areas that use computers; the computer facilities or systems which are used; projections of usage for the next three years; and new applications or systems that may be investigated. The projections represent the cumulative seat count number of students who will use computers for fall of FY93, FY94, and FY95. Increased usage is also expressed as the projected number of additional students who will use computers from fall FY92 to fall FY95.

Business and Services

Description: The Business and Services Division prepares students for entry into the job market or for continuing their education at a four year college. Courses provide real world experience through a curriculum tied to the skills needed by business and industry. Business Management programs range from Office Careers, Accounting and Computer Information Systems to Marketing/Retailing and Real Estate. Applied arts programs include Interior Design, Fashion Design, and Advertising Design and Illustration. Other courses develop the skills necessary to meet requirements of the travel/tourism, transportation/ physical distribution, criminal justice, and library technology professions. Other courses train students for positions in food services, hotel/motel management, ornamental horticulture, or supermarket management.

The Business and Services Division accounts for 23 percent of students enrolled in classes which use computers. Students in these instructional areas make use of the Graphics lab (IC 1015), IBM PC Labs (K 123 and IC 1108), the Seaton Computing Center, the UNIX System, and the Information/Word Processing Lab (IC3S).

Divisional Computing Goals: Following is a list of the divisional computing goals for the next three years.

- Work toward providing a computer for each full-time faculty member who needs one.
- Work toward increasing the availability of appropriate computer technology for use in the classroom.
- Provide computer access for the support of the instructional needs of part-time faculty, including those working in evening and weekend time periods.

Projected Usage: Computer usage over fall FY92 to fall FY95 is projected to increase by 35 percent for the Business and Services Division with the largest increase of 200 percent in the Fashion Design area. This trend is expected to continue and usage is expected to increase over the next three years. An increase of 16, 23, and 28 percent for FY92, 93, 94 respectively is projected over the next three years for a total increase of 1490 students using computers in this division. This increase is attributed to these areas of growth:

- Expansion of Computer Information Systems instruction which is micro-based and includes the latest integrated software.
- The growth of computer-based graphic design software and graphic tools for the Commercial Art area.
- The use of micro-based software by the Fashion Design and Interior Design areas of instruction.
- An expansion of use of microcomputers to include integrated office activities.

The following figure shows the percent increase that is anticipated over the next three years for each area of instruction and lists those areas where there is no anticipated or current usage of computers. The numbers are reported on student seat count.

BUSINESS AND SERVICES							
STUDENT SEAT COUNT - FALL							
<u>AREA</u>	<u>Actual</u>	<u>Projected</u>		<u>Projected</u>		<u>Projected</u>	
	<u>FY92</u>	<u>FY93</u>	<u>Increase</u>	<u>FY94</u>	<u>Increase</u>	<u>FY95</u>	<u>Increase</u>
Advertising Design	236	312	32%	350	42%	372	51%
Computer Information Sys.	2405	2745	14%	3035	26%	3255	35%
Fashion Design	12	36	200%	36	200%	36	200%
Office Careers	970	1200	24%	1325	37%	1450	49%
Travel & Tourism	650	650	0%	650	0%	650	0%
Total No. of Students	4273	4943	16%	5396	26%	5763	35%
NO USAGE PROJECTED:							
Business/Marketing/Management, Criminal Justice, Real Estate, Financial Management							

Figure 4. Projected Use for Business and Services

New Applications/Systems for Business and Services: Below is a brief description of some of the academic applications or systems that may be investigated and/or used in the future.

<u>INSTRUCTIONAL AREA</u>	<u>APPLICATION/SYSTEM</u>
Accounting	Business graphics Integrated Accounting packages Econometric modeling/simulations
All Areas	Management of instruction and research via micro-based test scoring and data entry system tied to spreadsheet and database software
Business/Marketing/Management	Business graphics
Commercial Art	Graphics Design graphics High level graphics Desktop Publishing
Computer Assisted Design/Drafting	PC-based CADD programs
Computer Information Sys.	OS/2 Artificial intelligence Advanced BASIC programming environments (i.e. QuickBASIC v.4.5) Micro to mainframe file transfer Simulation
Criminal Justice	PC-based graphics/CADD
Fashion Design/Merchandising	Integrated facility management software
Hotel/Motel Management	PC-based graphics/CADD
Interior Design	Dial-out to online databases
Library Technology	Electronic Mail
Office Careers	Electronic file transfer CD-ROM applications Real Estate management
Real Estate	POS/Inventory Control simulations
Supermarket Management	PC-based routing/scheduling programs
Transportation/Phy. Dist. Ind.	CAI programs
Travel/Tourism	

Figure 5. New Applications/Systems for Business and Services

Communications

Description: The Communications Division offers courses designed to:

- Develop the student's understanding of written and oral communications through the more effective use of language.

- Develop the student's skills in study, analysis and evaluation.
- Develop the student's awareness of cultural diversity through literature courses and topics within English, journalism, and speech courses.
- Provide the student with the opportunity to experience new technologies through computer enhanced instruction in basic skill courses.

The subject areas of the Communications Division are English (including composition, creative writing, and literature), journalism, and speech.

The Communications Division is rapidly expanding the use of computer assisted instruction in its subject areas. Primary current applications include the use of word processing software in English composition, creative writing, and speech courses and the use of desktop publishing applications in journalism classes and for the production of the student newspaper, the Courier.

Divisional Computing Goals: Following is a list of the divisional computing goals for the next three years.

- Explore ways for speech classes to use the computer labs for instructional purposes.
- Explore and evaluate further developments in teaching writing using a computer including: networked collaborative writing, electronic bulletin boards, hypertext and hypermedia.

Projected Usage: In fall quarter, 1991, the Communications Division has expanded classroom use of computer assisted instruction in English and Journalism to approximately twenty class sections and 455 students. The projected annual usage for 1991-92 is 60 sections or 1,955 students given the current level of faculty involvement and availability of facilities. The potential to double English composition, journalism, and speech usage to 120 sections exists as a realistic possibility if lab facilities are available. The numbers are reported on student seat count.

COMMUNICATIONS								
STUDENT SEAT COUNT - FALL								
AREA	Actual FY92	Projected FY93	Increase	Projected FY94	Increase	Projected FY95	Increase	Increase FY93-95
English	1210	1955	62%	2785	130%	3575	195%	2365
Journalism	35	105	200%	175	400%	255	629%	220
Total Number of Students	1245	2060	65%	2960	138%	3830	208%	2585
NO USAGE PROJECTED:								

Figure 6. Projected Use for Communications

New Applications/Systems for Communications: The following is a brief description of the academic applications or systems that may be investigated and/or used in the future.

<u>INSTRUCTIONAL AREA</u>	<u>APPLICATION/SYSTEM</u>
English	IBM word processing Authoring language Optical character recognition Software grammar checking Desktop Publishing
Journalism	Text/graphics scanning Optical character recognition Software grammar checking IBM word processing
Speech	Macro speechwriting program Forensics tournament organizing program

Figure 7. New Application/Systems for Communications

Humanities

Description: The Humanities Division offers courses designed to:

- Develop the student's skills in study, analysis, synthesis and evaluation
- Provide the student the opportunity to develop original ideas and to create works of art
- Develop the student's understanding of history, philosophy, the fine and performing arts
- Develop the student's awareness of the nature of being human-- social issues and spiritual aspirations
- Develop student's insight into various cultures through the study of the arts, literature, history and foreign languages
- Develop through study and participation the student's insight and abilities in the visual and performing arts
- Provide the framework for an understanding of cultural, political and intellectual heritage

The subject areas of the Humanities Division include: art, English literature, history, humanities, languages, music, philosophy, religious studies, and theater arts.

The Humanities Division accounts for two percent of students enrolled in classes which use computers on Central Campus. PLATO is used in music theory instruction. Computer use is tied directly to classroom instruction in the Humanities area.

Projected Usage: Computer usage from the fall of FY91 to fall FY95 is projected to increase by 536 percent for the Humanities Division. The results of the Academic Computing Departmental Survey predict a 143, 279 and 536% increase in student usage of computers from FY91 thru FY95 for a total student increase of 375 in student use over fall FY91 through fall FY95 for the Humanities area (refer to the following figure). This will result in approximately 375 additional students enrolled in courses which will use computers. This increase is attributed to a major increase in usage by the foreign language area and a 86 percent increase by the Music area. The Humanities Division has projected the highest percentage increase at 536 percent over all other areas. The numbers are reported on student seat count.

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HUMANITIES
STUDENT SEAT COUNT - FALL

<u>AREA</u>	<u>Actual</u> <u>FY92</u>	<u>Projected</u> <u>FY93</u>	<u>Increase</u>	<u>Projected</u> <u>FY94</u>	<u>Increase</u>	<u>Projected</u> <u>FY95</u>	<u>Increase</u>	<u>Increase</u> <u>FY93-95</u>
Art	0	10	0%	25	0%	45	0%	45
Foreign Languages	0	35		90		180		180
History	0	35		50		90		90
Music	70	90	29%	100	43%	130	86%	60
Total No. of Students	70	170	143%	265	279%	445	536%	375

NO USAGE PROJECTED:

Philosophy, Foreign Language, History

Figure 8. Projected Use for Humanities

New Applications/System for Humanities: The following is a brief description of the academic applications or systems that may be investigated and/or used in the future.

<u>INSTRUCTIONAL AREA</u>	<u>APPLICATION/SYSTEM</u>
All Areas	Management of instruction and research via micro-based test scoring and data entry system tied to spreadsheet and database software
Art	CADD, IBM-PC, Macintosh High end computer graphics program Interactive video disks
Music	PFS: Professional Write Music composition/MIDI interface to electronic synthesizer
Theater	Textbook software supplements, CAI Lighting control, CADD, database applications

Figure 9. New Applications/Systems for Humanities

Natural Sciences

Description: The Natural Sciences Division integrates mathematics, the physical and natural sciences, and physical education. Courses and curricula are designed to develop knowledge, skills and attributes applicable to non-academic life; mastery of the scientific method; ability to organize resources toward solving a specific problem; and unbiased analysis of quantitative data. Physics, chemistry and earth sciences deal with natural laws, theories, and their applications to man's needs. Universal phenomena are studied and analyzed. The biological sciences examine the components of the living world and their interactions with the physical world. Applications of science to man, the world and the way we live with the world are made frequently. Engineering and technology combine the principles of science with judgment to transform materials and energy for the technological improvement of man's life. Mathematics provides the tools and skills to organize our thoughts and apply problem-solving techniques. It helps students better understand the quantitative relationships found in business, technology and the physical, natural and social sciences. Physical education (the study of motion) stresses the gainful use of recreational and leisure time, the spirit of both cooperation and personal accomplishment, and the development of a physically healthy way of life.

The Natural Sciences area accounts for 13 percent of students enrolled in classes which use computers. Currently six of nine instructional areas now use computers. Usage is highest for the math and biology areas. Other areas of usage include botany, physics, and chemistry.

Students in the Natural Sciences area make use of the Seaton Computing Center, the LRC Microcomputer Lab (SRC 3021), and the PLATO system.

Projected Usage: Computer usage from fall of FY92 to fall of FY95 is projected to increase by 42 percent. Increases of 11, 25 and 42 percent are expected for FY93, FY94 and FY95 in student use of computers in this division resulting in approximately 861 additional students enrolled in courses which use computers (refer to the following figure). This increase is due mainly to expansion in the use of computers by the math area which will be integrating the use of computers into their curriculum. There is also projected expansion in the use of microcomputers by the physics and anatomy areas. The following figure shows the percent increase that is anticipated over the next three years and lists those areas where there is no anticipated or current usage of computers. The numbers are reported on student seat count.

NATURAL SCIENCES								
STUDENT SEAT COUNT - FALL								
AREA	Projected FY92	Projected FY93	Increase	Projected FY94	Increase	Projected FY95	Increase	Increase FY92-95
Anatomy and Physiology	100	150	50%	200	100%	250	150%	150
Biology	450	450	0%	500	11%	550	22%	100
Botany	20	40	100%	40	100%	40	100%	20
Chemistry	118	135	14%	155	31%	180	53%	62
Math	1050	1160	10%	1300	24%	1475	40%	425
Physics	325	357	10%	392	21%	429	32%	104
Total No. of Students	2063	2292	11%	2587	25%	2924	42%	861
NO USAGE PROJECTED:								
Earth Science, Engineering, Physical Education/Athletics								

Figure 10. Projected Computer Use for Natural Sciences

New Applications/Systems for Natural Sciences: Below is a brief description of the academic application or system that may be investigated and/or used in the future.

<i>INSTRUCTIONAL AREA</i>	<i>APPLICATION/SYSTEM</i>
All Areas	Management of instruction and research via micro-based test scoring and data entry system tied to spreadsheet and database software
Biology	CAI, simulations Interactive video disks
Chemistry	CAI, simulations
Earth Sciences	CAI, simulations Interactive video disks
Mathematics	Equation solving software
Physical Education	Training Management software
Physics	CAI, simulations Equation solving software

Figure 11. New Applications/Systems for Natural Sciences

Occupational and Vocational Education

Description: The Occupational and Vocational Education Division prepares students for employment in the health and technical fields by tailoring curricula to address the diverse occupational needs of the college district.

In pursuing its commitment to meet the needs of the community it serves, College of DuPage is dedicated to providing high quality occupational programs for students working toward professional, semi-professional, technical and skilled jobs, with curricula that reflect the quick-moving technological demands of our society.

Students can expect to meet instructors who are experts in their fields. Occupational faculty members usually have three or more years work experience backed by professional degrees. They stay abreast of the state-of-the-art and are alert to changes in techniques, job requirements, and the labor market. The following figures list the areas of instruction for the Technology and Health and Public Services areas.

The Occupational and Vocational Education accounts for 8 percent of students enrolled in classes which use computers. Currently nine of twelve instructional areas use computers in Health and Public Services and nine of twelve areas in Technology (refer to the following figures). These include human services, medical transcription, occupational therapy, nursing, medical records technology, radiographic technology, respiratory therapy, nursing and child care and development for Health and Public Services; and computer aided design, graphic arts, manufacturing technology, electronics, architecture, communications and sciences, electromechanical, and photography for the Technology area.

Students using computers in the Health and Public Services area make use of IBM PC's located within the Division as well as the Seaton Computing Center and the PLATO system. The nursing program has recently introduced interactive video disk technology into their program.

Students using computers in the Technology area make use of hardware which is dedicated to highly specialized applications, many of which are located within the Division. These include the Seaton Computing Center CADD workstations, the Amiga system for photography, the IBM PC-based Numerical Control system, the Zenith/Fox microcomputers for Digital microprocessing, PC-based CADD systems for architecture, manufacturing, and the use of Macintosh microcomputers by Graphic Arts. Students in the Technology area also use computer lab resources.

Divisional Computing Goals: Following is a list of the divisional computing goals for the next three years.

- Encourage the Division faculty in the continued investigation of new and emerging computer applications in the Technology, Health and Public Services fields.
- Encourage the investigation of curriculum modifications that take advantage of the latest changes in software and hardware uses.

Projected Usage: Computer usage from fall FY92 to fall FY95 is projected to increase by 20 percent for the Occupational and Vocational Education Division. This trend is expected to continue as indicated by the projected increase in number of students using computers for each subdivision (see figure below). Increases of 19 and 20 percent are expected for FY93 and FY94 respectively for a total increase of 326 students using computers for the Occupational and Vocational Education Division. The following figure also lists those areas where there is no anticipated or current usage of computers. The numbers are reported on student seat count.

**OCCUPATIONAL AND VOCATIONAL EDUCATION
STUDENT SEAT COUNT - FALL**

<u>AREA</u>	<u>Actual FY92</u>	<u>Projected FY93</u>	<u>Increase</u>	<u>Projected FY94</u>	<u>Increase</u>	<u>Projected FY95</u>	<u>Increase</u>	<u>Increase FY93-95</u>
HEALTH AND PUBLIC SERVICES								
Health	320	325	2%	325	2%	325	2%	5
Medical Record Technology	40	50	25%	55	27%	60	33%	20
Radiology Technology	60	65	8%	65	8%	65	8%	5
Respiratory Therapy	40	40	0%	40	0%	40	0%	0
Total No. of Students	460	480	4%	485	5%	490	6%	30
TECHNOLOGY								
Air Conditioning & Refrig.	40	40	0%	40	0%	40	0%	0
Architecture	132	156	18%	192	31%	192	31%	60
Commercial Arts and Sciences	36	36	0%	36	0%	36	0%	0
Computer Assisted Drafting/Design	180	268	49%	290	38%	308	42%	128
Communications Arts & Sciences	36	36	0%	36	0%	36	0%	0
Electronics	44	44	0%	44	0%	44	0%	0
Graphics Arts	224	280	25%	280	20%	280	20%	56
Manufacturing Technology	157	205	31%	207	24%	209	25%	52
Total No. of Students	813	1029	27%	1089	25%	1109	27%	296
Total No. of Students	1273	1509	19%	1574	19%	1599	20%	326

NO USAGE PROJECTED:

Health and Public Services: Recreational Leadership, Long Care Administration, Fire Science Technology

Figure 12. Projected Computer Use for Occupational and Vocational Education

New Applications/Systems For Occupational & Vocational Education Division: Below is a brief description of the academic applications or systems that may be investigated and/or used in the future.

<u>INSTRUCTIONAL AREA</u>	<u>APPLICATION/SYSTEM</u>
All Areas	Management of instruction and research via micro-based test scoring and data entry system tied to spreadsheet and database software
Child Care and Development	Pre-School software
Communication Arts and Sciences	Animator Amiga
Computer Assisted Drafting/Design	PC-based CAD/D software
Digital Microprocessor Technology	Computer-based circuit design
Graphic Arts	Flat color separation on the Macintosh
	Process color separation on the Macintosh
	Drawing and color separation on the Macintosh
Heating and Air Conditioning	Duct design
	Airflow calculation
Manufacturing Technology	Graphics for numerical control
	CNC connect to lathe
	Interactive video
	Automated manufacturing (robotics, inventory storage and retrieval)
Medical Records	Simulate Medical Records Office
Medical Transcription	(Hospital Setting)
Nursing	Simulate clinical setting
	Interactive video disks
Occupational Therapy	Simulate clinical setting
Radiology Technology	Simulation of CT & MRI
	Scanner and PT. information
Respiratory Therapy	Simulation lab

Figure 13. New Applications/Systems for Occupational and Vocational Education

Social and Behavioral Sciences

Description: The Social and Behavioral Sciences Division seeks to cultivate in students a broad perspective of man's behavior, cultural heritage, relationship with others, social institutions and the environment. Nine subject areas are included: anthropology, business law, economics, education, geography, political science, psychology, social science and sociology.

For those who have not yet decided on a career, the various disciplines allow exploration of several fields of study. For those interested in personal growth, the Social and Behavioral Sciences Division provides exposure to concepts that have immediate applications to everyday life.

In addition to imparting proficiency in academic disciplines, this division seeks to challenge the learner to critically examine values, ideologies, social structures, political arrangements, and accepted assumptions.

The Social and Behavioral Sciences Division accounts for 5 percent of students enrolled in classes which use computers. Currently six of nine instructional areas now use computers and one area of instruction, sociology, contributes to 48 percent of the total usage. Other areas of usage includes psychology, anthropology and education, and political science.

Students in these instructional areas make use of the Seaton Computing Center, the LRC computer workroom and the PLATO system. Instructional software is also used on the Apple II and Macintosh microcomputers. Faculty in the Social and Behavioral Sciences Division are now using computers as an aid to the management of instruction, for grading, word processing and the evaluation of student study patterns. They are also investigating the use of authoring languages for the development of instructional software.

Divisional Computing Goals: Following is a list of the divisional computing goals for the next three years.

- Maintain and increase the number of faculty using computers for classroom management and instructional purposes.
- Increase the availability of appropriate computer technology for use in the classroom.

Projected Usage: Computer usage for fall of FY92, to fall FY95 is projected to increase by 34 percent for the Social and Behavioral Sciences Division. An increase of 24, 29, and 34 percent for FY92 through FY95 in student use of computers is predicted for this division. A total increase of 255 students is expected by FY94. The numbers are reported on student seat count.

<i>SOCIAL AND BEHAVIORAL SCIENCES</i>								
<i>STUDENT SEAT COUNT - FALL</i>								
<u>AREA</u>	<u>Actual FY92</u>	<u>Projected FY93</u>	<u>Increase</u>	<u>Projected FY94</u>	<u>Increase</u>	<u>Projected FY95</u>	<u>Increase</u>	<u>Increase FY93-95</u>
Anthropology	100	105	5%	105	5%	105	5%	5
Education	100	105	5%	110	10%	118	18%	18
Political Science	0	70	0%	75	0%	75	0%	75
Psychology	120	130	8%	140	17%	150	25%	30
Sociology	430	450	5%	466	8%	480	12%	50
Geography	0	70	0%	74	0%	77	0%	77
Total No. of Students	750	930	24%	970	29%	1005	34%	255
<i>NO USAGE PROJECTED:</i>								
Business Law, Economics, Geography,								

Figure 14. Projected Computer Use for Social and Behavioral Sciences

New Applications/Systems For Social and Behavioral Sciences: Below is a brief description of the academic applications or systems that may be investigated and/or used in the future.

<u>INSTRUCTIONAL AREA</u>	<u>APPLICATIONS/SYSTEM</u>
All Areas	Management of instruction and research via a micro-based test scoring and data entry system (Scantron) tied to spreadsheet and database software (dBASE, Lotus 1-2-3)
All Areas	Micro-based statistics as part of research methods course
Anthropology	PLATO, IBM-PC Simulations
Psychology	Experiment simulation, data analysis, and testing
Social Science	Simulations

Figure 15. New Applications/Systems for Social and Behavioral Sciences

Open Campus

Three instructional areas of Open Campus; Academic Alternatives, Instructional Affairs and Community Education, and Business and Professional Institute are described in the following sections in terms of an instructional or support objective along with projections on areas of new computer usage and the new applications or systems that may be involved. Again, projections have been made (based on the results of the Academic Computing Departmental Survey) as to the increase in student usage that is expected over the next three years.

Academic Alternatives

The Academic Alternatives area includes Instructional Alternatives, the Instructional Design office, and the Testing and Open Campus Student Services office. The Instructional Alternatives area consists of English As A Second Language, Developmental/Remedial, Adult Basic Education, Literacy, Flexible Learning Opportunities, Telelearning, and the Field and Coordinated Studies Program; and is the instructional area teaching students within Academic Alternatives. The Instructional Design, and Testing and Open Campus Student Services primarily receive administrative support. However, the Testing and Open Campus Student Services office also provides services that are directly related to instruction and need support. Each of these areas is described below.

- Instructional Alternatives

Description: Instructional Alternatives delivers courses primarily in ways alternative to classroom-delivered instruction or using alternative systems of delivery. Course delivery methods include telelearning (students learn through various media and combinations thereof), flexible learning (self-paced completion of regular catalog courses), experiential learning (courses which combine field experiences and classroom instruction), interdisciplinary studies (where two disciplines are blended), remedial/developmental skill building (individualized instruction in basic skills and study skills), Adult Basic Education, GED instruction, Literacy, and English as a Second Language. Although there are distinct differences between delivery modes and content in these different programs, all programs delivered through Instructional Alternatives emphasize less traditional modes of learning which meet the needs or interests of community members.

All programs are currently delivered through the classroom, field meetings, Learning Lab and the Skills Center Lab on the Glen Ellyn campus and at four neighborhood Learning Centers located in Naperville, Glendale Heights, Hinsdale, and Lombard. Increasingly, both the modernization of growth of education delivered in non-traditional ways and at off-campus locations depends on the incorporation of computer-based instruction and record keeping into this area.

Computer use in the Learning Lab and Learning Centers accounts for 94 percent of students enrolled in courses which use computers in Academic Alternatives. Currently four of six course delivery methods now use computers. These include English as a Second Language, remedial/developmental skills building, adult basic education, and flexible learning options.

Students using the Learning Lab make use of the microcomputers and PLATO terminals located in the lab as well as the Instructional Microcomputer Lab (SRC 3021) and the PLATO system.

The Field and Coordinated Studies program provides degree-oriented courses structured around major local, national or international field experiences. This program specializes in learning adventures, based on the idea that people learn best from real life experiences. The interdisciplinary study portion of the Field and Coordinated Studies program combines the content and objectives of two or more courses into a single integrated learning experience.

The Field and Coordinated Studies program accounts for 6 percent of students enrolled in classes which use computers for Academic Alternatives. These students make use of the Instructional Microcomputer Lab (SRC 3021) and the PLATO system.

Divisional Computing Goals: Following is a list of the divisional computing goals for the next three years.

- Expand use of computers for instructional delivery in Learning Lab and at Learning Centers.
- Continue marketing efforts to promote computer training for community members of District 502.

Projected Usage: Computer usage in Academic Alternatives from fall of FY92, to fall of FY95 is projected to increase by 41 percent. An increase of 474 additional students enrolled in courses which use computers (refer to the following figure). Increased usage is expected for most alternative modes of delivery. Increased usage is also expected at each of the Learning Centers once students

are provided with additional computer systems and software at these remote locations. The following figure shows the percent increase that is anticipated for each of these delivery methods over the next three years. The numbers are reported on student seat count.

ACADEMIC ALTERNATIVES							
STUDENT SEAT COUNT - FALL							
<u>AREA</u>	<u>Actual FY92</u>	<u>Projected FY93</u>	<u>Increase</u>	<u>Projected FY94</u>	<u>Increase</u>	<u>Projected FY95</u>	<u>Increase FY93-95</u>
Adult Basic Education	30	40	33%	52	73%	65	117%
Coordinated Studies	242	261	8%	276	14%	294	21%
English as a Second Language	200	250	25%	300	50%	350	75%
Field Studies	65	75	15%	80	23%	85	31%
Flexible Learning Options	70	80	14%	95	36%	110	57%
Literacy	177	184	4%	198	12%	214	21%
Remedial/Development	270	280	4%	295	9%	310	15%
Telelearning	100	150	50%	175	75%	200	100%
Total No. of Students	1154	1320	14%	1471	27%	1628	41%
							474

Figure 16. Projected Computer Use for Academic Alternatives

New Applications/Systems for Instructional Alternatives: The following is a brief description of the academic applications or systems that may be investigated and/or used in the future.

<u>INSTRUCTIONAL AREA</u>	<u>APPLICATION/SYSTEM</u>
All Areas	Authoring system for the development of instructional software
All Areas	Computer text/graphics generation program
All Areas	Management of instruction and research via micro-based test scoring and data entry system tied to spreadsheet and database software
ESL, Remedial/Development, Telelearning	Expand use of IBM, PLATO, and Apple II's Expand use of PLATO PC network
Flexible learning options	Work with Computing and Information Systems to develop applications
Remedial/Development Flexible learning options	Interactive video

Figure 17. New Applications or Systems for Instructional Alternatives

- Instructional Design

Description: The Instructional Design Office helps instructors develop new course materials and alternative methods of delivering existing courses. It assists all units of the college in planning, designing, developing, and evaluating new delivery systems, and monitors alternative delivery strategies during their field tests.

The Instructional Design area is actively involved in the investigation of new computer-based applications and in the use of computers as an alternative method of delivering or supporting existing courses. PLATO usage throughout the college is promoted and supported by the Instructional Design area.

The Office of Instructional Design will become more heavily involved in the development of computer-based interactive video projects, evaluation of authoring systems, investigation of network-based computer alternative instructional systems, educational management systems and other applications of computer technology to instruction. Because the Office of Instructional Design helps to support college-wide instruction, many of the specific computer-based instructional projects are listed in the plans for the other instructional units of the college. For this reason, they are not listed here.

Divisional Computing Goals: Following is a list of the divisional computing goals for the next three years.

- Expand PLATO capability to at least one off Campus Learning Center.
- Continue to work with Computing and Information Systems to improve the ALAN instructional management system.
- Develop a computer-based composition course for delivery in the Learning Lab.

- Testing and Open Campus Student Services

Description: The Testing program at the college uses various tests and inventories to provide students with information about their career interests and abilities in order to help them select a viable course of study. The areas of testing include:

- Career, Interest, and Personality Testing - used to compare a student's interest and temperament with other people employed in various occupations or in a select sample.
- Career Planning Program - used by students to gain a range of knowledge about their vocational interests and abilities, as well as other important characteristics that are helpful in selecting an area of study.
- Pre-Course Testing - used to measure skills and provide advice to students intending to enroll in English 101 and Math 110.
- Testing for On-Going Courses - provides testing for individualized courses, telecourses and make-up examinations.
- Admissions Testing for Health Program - Administers admissions tests for the Associate Degree for Nursing, Licensed Practical Nursing and the Allied Sciences.
- Credit by Demonstrated Competence Testing - Allows students to gain credit for knowledge acquired in an occupation, or other situations outside of college.
- Special Purpose Testing - specialized tests for a specific purpose or area of instruction.

Test results and interpretive information are provided to students and these results are discussed and utilized by the Counseling area.

The Testing and Alternative Credit area has only just begun to use computers for administration, storage, and analysis of test results. The testing program is becoming more involved in test bank systems, test development, adaptive placement testing, interactive testing, test/prescriptive systems for flexible learning course tests, nursing admissions testing, and constitution testing. Networking of the Educational Advising Centers and Regional Offices together to utilize a common appointment system for Open Campus counselor appointments is a goal for the future.

Divisional Computing Goals: Following is a list of the divisional computing goals for the next three years.

- Evaluate and purchase appropriate testing software for Testing Lab computers.

- Establish a comprehensive computerized testing system to include adaptive testing, on-line testing for alternative delivery programs, and an assessment system for instructional programs on-and-off campus.
- Provide a computerized career assessment support system for counseling and career related courses.

Projected Usage: Computer usage for testing is expected to increase dramatically over the next three years. We are projecting a 95 percent increase from FY92 to FY95. Below is a table showing the current usage and what is projected.

TESTING AND OPEN CAMPUS SERVICES								
STUDENT SEAT COUNT - FALL								
AREA	Actual FY92	Projected FY93	Increase	Projected FY94	Increase	Projected FY95	Increase	Increase FY93-95
Pre-Course Testing								
English	8101	8344	3%	8594	6%	8852	9%	751
Math	0	6100		6283	3%	6472	6%	6472
Flexible Learning								
Assessment	70	140	100%	280	300%	560	700%	490
Telelearning	280	350	25%	450	61%	550	96%	270
	8451	14934	77%	15607	81%	16434	95%	7983

Figure 18. Projected Computer Use for the Testing and Open Campus Services

Since the testing lab is not used for students in a class for classroom work and preparation; Testing and Open Campus Services seat counts are not used in the student usage and projected statistics.

Business and Professional Institute

Description: The Business and Professional Institute is designed to provide education, training and economic development assistance to business and professionals in District 502. Institute staff members will consult with businesses and organizations to determine training needs and design training programs. Training programs may be seminars, credit courses or non-credit programs designed for special needs. Programs may be offered on campus or at a place of business. The Institute also offers economics development assistance to businesses, chambers, associations, or government agencies. Seminars promoting small business development and specialized small business assistance through counseling and referral are other services rendered to district businesses. Within the Institute, the Regional Assistance Center provides a wide range of entry-level job skills retraining programs for qualified displaced workers.

Professional continuing education activities include, but are not limited to, seminars, workshops and conferences in data processing, nursing, manufacturing, management, human service, robotics, CADD/CAM, CPR, and small business operation.

The Business and Professional Institute accounts for 3 percent of individuals enrolled in classes which use computers. Computers are used in support of data processing, business, office careers, and technology courses. The displaced worker program also provides entry-level computer training.

BPI instruction incorporates the use of the CADD system, the Office Careers lab, and the three BPI Data Processing labs.

Projected Usage: Computer usage for the Business and Professional Institute is projected to increase by 35 percent from the fall of FY92, to fall of FY95. Increases of 10, 21, and 35 percent

for FY93, FY94, and FY95 are expected resulting in approximately 159 additional individuals enrolled in courses which use computers (refer to the following figure.) The numbers are reported on the student seat count. This increase does not include projected growth of the Regional Assistance Center. The projected increase for BPI is based on the following considerations:

- The demand for computer training will increase in step with the growth of technology and number of businesses within our district.
- The need for training will increase as more complex applications are converted to microcomputers and become cost effective for small businesses.
- As the use of computers replaces many manual activities, the number of displaced workers will increase. They must be provided with retraining to operate these computers.

<i>BUSINESS AND PROFESSIONAL INSTITUTE</i>					
<i>STUDENT SEAT COUNT - FALL</i>					
<i>AREA</i>	<i>Actual FY92</i>	<i>Projected FY93 Increase</i>	<i>Projected FY94 Increase</i>	<i>Projected FY95 Increase</i>	<i>Increase FY93-95</i>
Data Processing	449	495 10%	545 21%	608 35%	159

Figure 19. Projected Computer Use for the Business and Professional Institute

Instructional Affairs and Community Education

Instructional Affairs and Community Education area includes off-campus credit classes, Regional Centers and community education programs.

- Regional Centers

Description: The Regional Centers provide information, registration assistance and advising services to individuals at three off-campus locations. These include the Naperville Regional Center in Naperville, North Regional Center in Addison and the Westmont Regional Center in Hinsdale. Comprehensive credit and non-credit programs are offered throughout the district at over 50 sites. Off-campus credit classes follow established course outlines and maintain the same high standards of instruction as offered on the Central Campus. The Regional Centers also support community education classes.

The Regional Centers account for approximately 20 percent of credit hours generated at College of DuPage. These include courses in Business and Services, Communications, Humanities, Social and Behavioral Sciences, Natural Sciences, and Occupational/Vocational, as well as off-campus community education programs.

Off-campus student computer resources include 31 IBM PS/2's at the Naperville Regional Center, 31 IBM PS/2's at the Westmont Regional Center and 50 IBM PS/2's at the Davea Regional Center. Many students receiving instruction at off-campus locations must still return to the Central Campus to use computer equipment. The dean and associate deans agree that there is a current and projected need for additional microcomputer and mainframe stations at off-campus locations.

Program growth and conflicts between open lab time and scheduled usage of the lab on weekdays, evenings and weekends indicate the need for an additional networked lab of 31 machines at the North Regional Office.

- Community Education

Description: Community Education consists of non-credit adult continuing education, Kids on Campus, Teens/Talent Search and the Older Adult Institute which offers both non-credit and credit courses. Classes in these program areas are offered on the Glen Ellyn campus as well as at off-campus sites throughout the district.

Computer labs at the Regional Centers support off-campus community education. The various on-campus community education programs are served by one non-credit computer lab which houses 20 IBM PC's, and one Apple Computer Lab also containing 20 workstations.

Projected Usage: Computer usage from fall of FY92 to the fall of FY95 is projected to increase by 56 percent for the Instructional Affairs and Community Education. An increase of approximately 1,337 additional students enrolled in courses which use computers (see the following figure). The numbers are reported on student seat count. There are several reasons for the increase.

- New centers operational in Naperville and Westmont. Each lab has 31 PS/2's in a networked environment.
- The DAVEA (Addison) Regional Center will increased the number of PS/2's in its lab to 50 during FY92.
- The non-traditional areas are expected to start using computers.

The following table shows a breakdown of the various programs for Instructional Affairs and Community Education.

INSTRUCTIONAL AFFAIRS & COMMUNITY EDUCATION								
STUDENT SEAT COUNT - FALL								
AREA	Actual FY92	Projected FY93	Increase	Projected FY94	Increase	Projected FY95	Increase	Increase FY93-95
Community Education								
Non-Credit Courses	486	506	4%	526	8%	546	12%	60
Non-Credit OAI	20	40	100%	60	200%	80	300%	60
Apple Lab	150	150	0%	150	0%	150	0%	0
Total No. of Students	656	696	6%	736	12%	776	18%	120
DAVEA Center								
Accounting	290	329	13%	348	20%	367	27%	77
Computer Information Sys.	393	541	38%	584	49%	627	60%	234
English	162	184	14%	206	27%	228	41%	66
Office Careers	68	102	50%	108	59%	114	68%	46
Other Credit Courses	60	90	50%	120	100%	150	150%	90
Non-Credit Courses	0	0	0%	0	0%	0	0%	0
Total No. of Students	973	1,246	28%	1,366	40%	1,486	53%	513
Naperville Center								
Accounting	580	618	7%	656	13%	694	20%	114
Computer Information Sys.	428	542	27%	782	83%	850	99%	422
English	324	368	14%	412	27%	456	41%	132
Graphic Arts	0	0	0%	40	0%	80	0%	80
Office Careers	104	130	25%	156	50%	182	75%	78
Other Credit Courses	0	0	0%	20	0%	40	0%	40
Non-Credit Courses	528	578	9%	828	57%	898	70%	370
Total No. of Students	1,964	2,236	14%	2,894	47%	3,200	63%	1,236
Westmont Center								
Accounting	216	250	16%	269	25%	288	33%	72
Computer Information Sys.	172	239	39%	354	106%	390	127%	218
English	162	184	14%	206	27%	228	41%	66
Graphic Arts	0	0	0%	20	0%	40	0%	40
Office Careers	18	21	17%	42	133%	50	178%	32
Other Credit Courses	60	70	17%	130	117%	160	167%	100
Non-Credit Courses	402	434	8%	526	31%	578	44%	176
Total No. of Students	1,030	1,198	16%	1,547	50%	1,734	68%	704
Total No. of Students	4,623	5,376	16%	6,543	42%	7,196	56%	2,573

Figure 20. Projected Computer Use for Instructional Affairs & Community Education

New Applications/Systems for the Regional Centers: The following is a brief description of the academic applications that may be investigated and used in the future.

INSTRUCTIONAL AREA	APPLICATION/SYSTEM
All Regional Centers	Central storage of course outlines Test bank program Applications programs Scantron, entry and testing by computer Statistics programs Provide access to software now used on Central/Open campus at a remote computer site Using local/wide area networking

Figure 21. New Applications/Systems for Instructional Affairs & Community Education

Summary of Student Usage

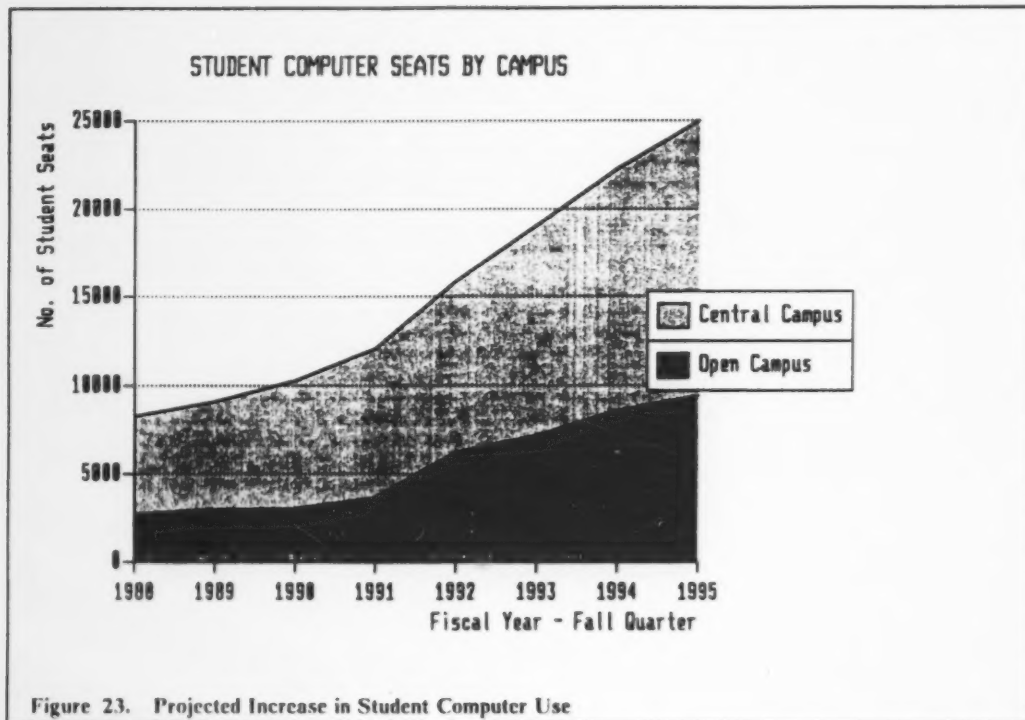
The following figure provides a summary of the projected cumulative growth and percent increase in student computer usage over the next three years for the college as a whole. The numbers are reported on student seat count.

SUMMARY OF COMPUTER USAGE GROWTH PROJECTIONS								
STUDENT SEAT COUNT - FALL								
AREA	Actual FY92	Projected FY93	Projected Increase	Projected FY94	Projected Increase	Projected FY95	Projected Increase	Increase FY92-95
Central Campus								
Business & Services (B&S)	4,273	4,943	16%	5,396	23%	5,763	28%	1,490
Communications (COM)	1,245	2,060	65%	2,960	83%	3,830	87%	2,585
Humanities & Liberal Arts (HUM)	70	170	143%	265	115%	445	142%	375
Natural Sciences (NS)	2,063	2,292	11%	2,587	23%	2,924	33%	861
Occupational & Vocational Education	1,273	1,509	19%	1,574	20%	1,599	21%	326
Social & Behavioral Science (SBS)	750	930	24%	970	24%	1,005	26%	255
Central Campus Total	9,674	11,904	23%	13,752	42%	15,566	61%	5,892
Open Campus								
Academic Alternatives (AA)	1,154	1,320	14%	1,471	24%	1,628	32%	474
Business & Professional Inst. (BPI)	449	495	10%	545	19%	608	29%	159
Instructional Affairs (IA)	4,623	5,376	16%	6,543	36%	7,196	39%	2,573
Open Campus Total	6,226	7,191	15%	8,559	37%	9,432	51%	3,206
Institutional Total	15,900	19,095	20%	22,311	40%	24,998	57%	9,098

Figure 22. Projected Increase in Student Computer Use

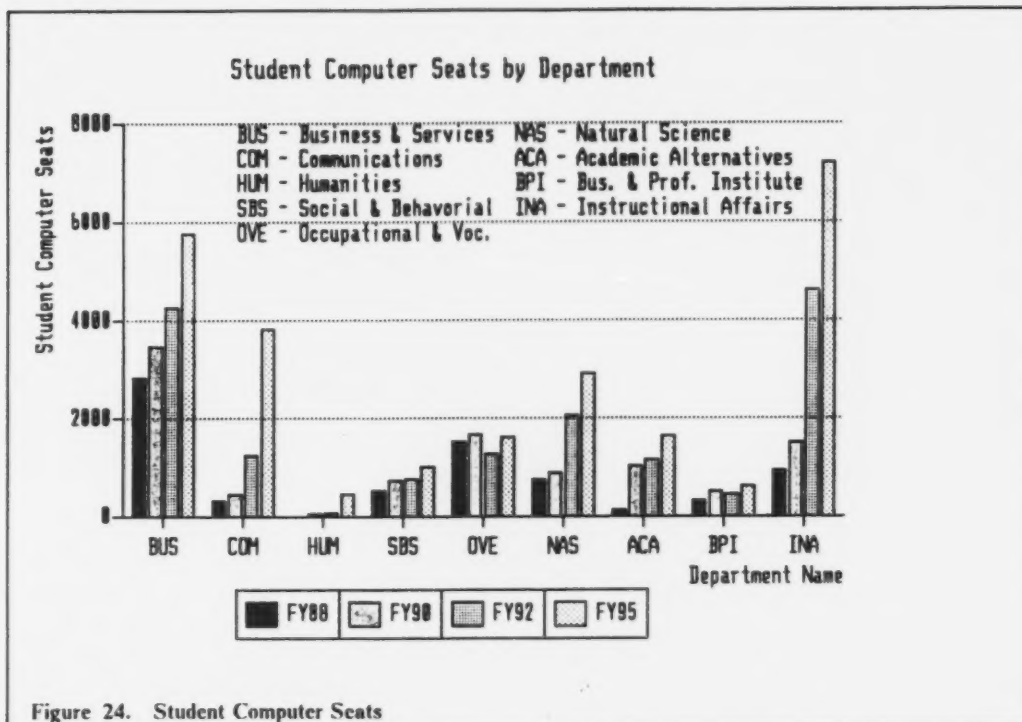
We are projecting a 20 percent increase from fall FY92 to fall FY93 in student enrollment in courses using computers. Central Campus computer usage is expected to increase by 61% or 5,892 students and Open Campus is expected to increase by 51% or 3,206 students over the next three years. The largest increase in number of students using computers is projected for the Communications Division, Business and Services and Instructional Affairs. By fall FY95 we are projecting a 57% increase or 9,098 additional students that will be using computers for course work. This is a 19 percent average yearly increase in student usage institution-wide.

The following figure shows the increase in student usage for FY88 thru FY92 and what is projected for FY93-FY95 for Central and Open Campus.



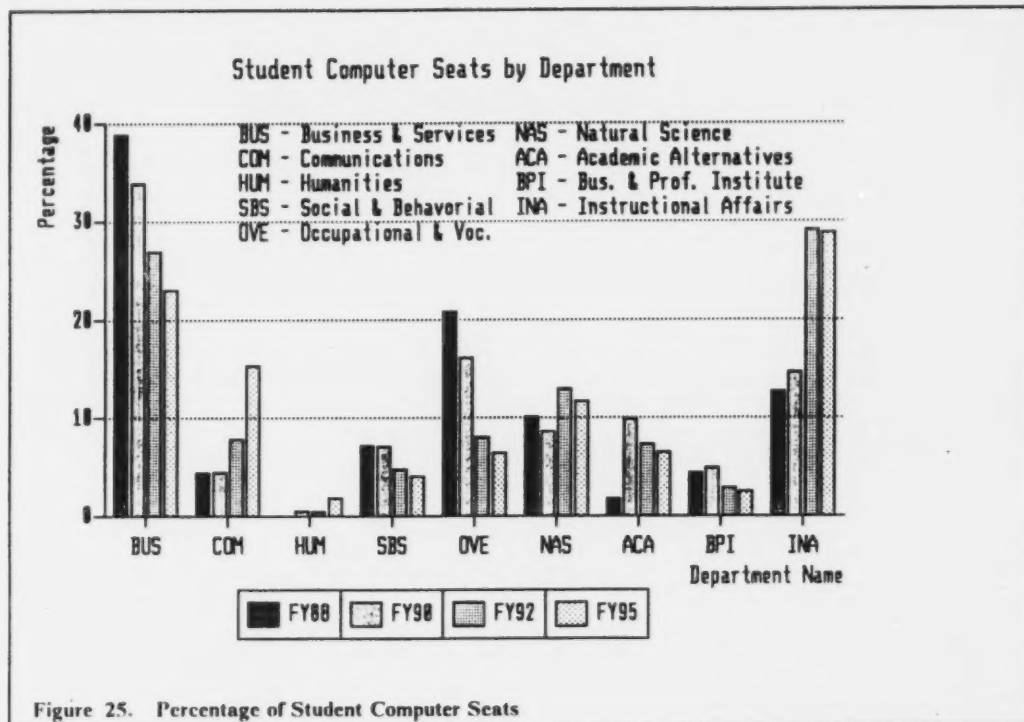
In FY91 we opened the Seaton Computing Center and you can see the large increase in usage for Central Campus. In the summer of FY92 we opened the regional centers and the increase is also dramatic.

The following chart shows the usage by each division for FY88, FY90, FY92 and what is projected for FY95.



Easily apparent are the programs that will use computers more and more in the curriculum. Instructional Affairs will have the most students with Business and Services second and Communications third.

The following chart shows the percentage of student seats in each division that are using computers. You can see Business and Services and Occupational and Vocational Education divisions dominated the number of students in FY88. The shift is toward using computers in all disciplines as demonstrated by the Communications division.



The following figure compares the institutional seat count for all courses vs. courses that use computers for each academic division including projections to FY95.

SUMMARY OF STUDENT SEAT-COUNT VS. STUDENTS USING COMPUTERS

Area	Actual FY92				Projected FY95			
	Seat Count	Computer Usage	Percent	Percent	Seat Count	Computer Usage	Percent	Percent
Central Campus								
Business & Services	10,167	4,273	42%	27%	11,122	5,763	52%	23%
Communications	5,304	1,245	23%	8%	5,797	3,830	66%	15%
Humanities	6,286	70	1%	0%	6,871	445	6%	2%
Natural Sciences	10,374	2,063	20%	13%	11,339	2,924	26%	12%
Occupational & Voc. Education	5,631	1,273	23%	8%	6,155	1,599	26%	6%
Social & Behavioral Science	5,579	750	13%	5%	6,098	1,005	16%	4%
Central Campus Total	43,341	9,674	22%	61%	47,382	15,566	33%	62%
Open Campus								
Academic Alternatives	10,227	1,154	11%	7%	11,178	1,628	15%	7%
Business & Professional Institute	3,185	449	14%	3%	3,481	608	17%	2%
Instructional Affairs	13,091	4,623	35%	29%	14,308	7,196	50%	29%
Open Campus Total	26,503	6,226	23%	39%	28,968	9,432	33%	38%
Institutional Total	69,844	15,900	23%	100%	76,349	24,998	33%	100%

* Projected FY95 seat count calculated at 3% annual growth

Figure 26. Summary of Student Seat-Count vs. Students Using Computers

For the fall FY92 23% of all student seats are using computers in courses. By fall FY95 that number is expected to increase by 9,098 to 24,998 or 33% that are using computers in a class.

Currently Instructional Affairs accounts for the largest number of students with 29%, while Communications will increase from 8% in FY92 to 15% in FY95. Usage within each division will increase by fall FY95 with Communications using the computer in 66% for all their students, Business and Services is second in FY95 with 52%.

The following figure shows the growth of computing compared to the total students at the college.

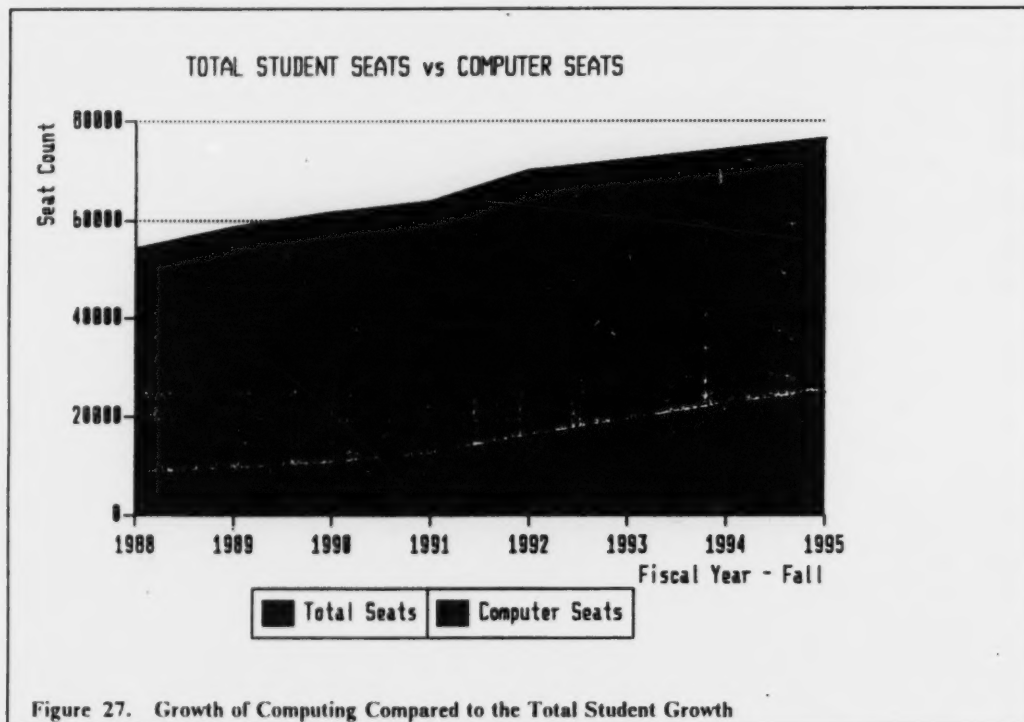


Figure 27. Growth of Computing Compared to the Total Student Growth

The graph shows a history of computer usage from FY88 to projected usage to FY95. In FY88 one in every eight students was using computers. For fall FY92 one in every five students on an average is using computers in the classroom. From FY88 to FY92 the number of students using a computer increased an average of 25% per year. From FY93-FY95 it is projected to grow at 20% per year. By FY95 one in every three students on an average will be using a computer in a class.

Hardware

The hardware needs of Academic Computing defines the computer equipment needed to meet the continued growth of the use of computers in instruction. This includes student and faculty hardware needs. By looking at the student seats and the number of contact hours needed by students for open labs and classroom labs we can project the additional computer needs.

Student Hardware

The following summarizes how additional microcomputers needed for growth of computer use at the institution was estimated.

- Academic divisions provided the number of students enrolled in courses using computers for fall FY91. Actual usage data was collected from the Seaton Center, Naperville and Westmont

Centers and K123 in Open Campus. The remaining labs usage was based on classes with dedicated student usage.

- Academic divisions provided estimates in enrollment in courses using computers for FY93-95. This included any growth attributed to new students, new courses using computers, and additional sections for courses already using computers.
- Academic divisions identified computer lab, open and/or classroom type of equipment, and number of contact hours for each course on an average.
- Contact hours were multiplied by the number of students for each equipment type to derive the total contact hours for all labs used for fall FY92 and the estimated contact hours needed in all labs for FY93-95.
- The total number of student contact hours supported by each workstation type for classroom labs and open labs were computed.
- This rate was divided into the estimated increase in contact hours for each workstation type in the open and classroom labs for fall FY93-95 to determine the additional workstations for each year.

Following is a detailed description of this process starting with student contact hours.

Student Contact Hours

Students using computers at the college are expected to vary in the amount of time they need to complete their assignments. Some courses such as Computing Information Systems or computer aided drafting and design are computer intensive and require 30-40 hours per quarter per course while others may involve only one or two hours per quarter at the computer.

In the Academic Computing Departmental Survey each academic division provided the average contact hours for each student for each course. This was separated into contact hours for open lab and classroom lab instruction use. Open lab was defined as the time students spent on an average outside the classroom working on projects in a college computer lab. The classroom usage includes the exact number of hours spent in a computer lab during the course for classroom time. The type of equipment used in the labs by the student for the course was also collected.

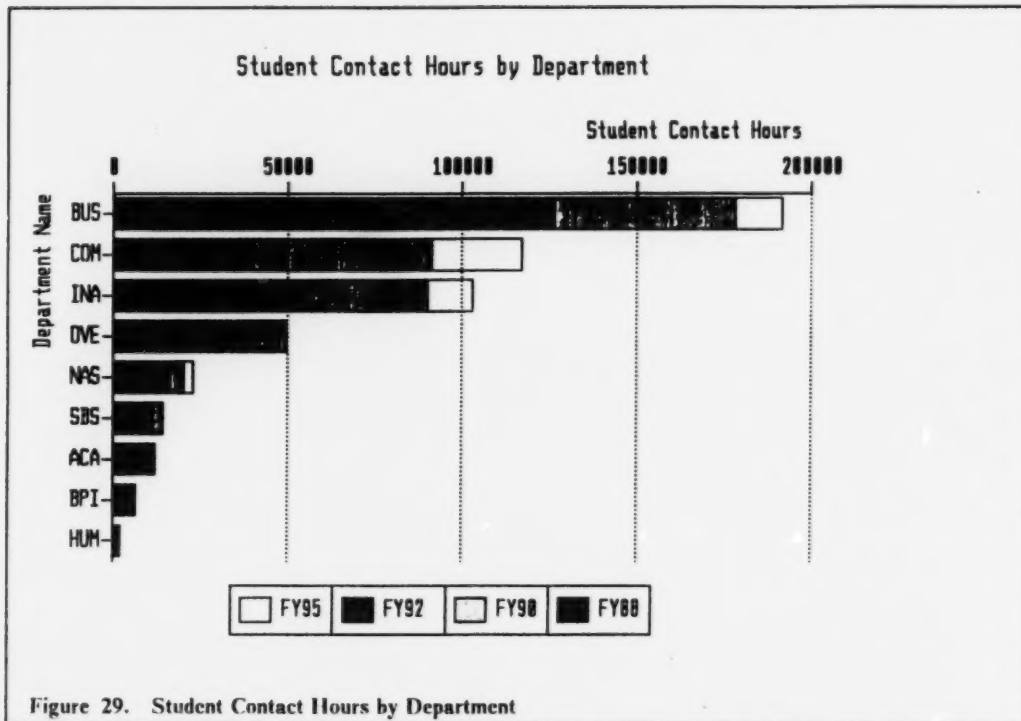
The following figure provides a summary of the current and projected increase in student contact hours for each area of Central and Open Campus for classroom and open labs. The FY92 column represents the number of contact hours for all students that took courses in each division for fall FY91. In FY93, FY94, and FY95 are the projected cumulative increases in the number of contact student hours for each division for the next three years. The increase FY93 - FY95 column represents the projected increase in contact hours by students now using computers as well as new courses and enrollment increase projections for fall FY92 to fall FY95.

SUMMARY OF GROWTH PROJECTIONS FOR ACADEMIC DIVISIONS								
STUDENT CONTACT HOURS - FALL								
AREA	Actual FY92	Projected 1993	Increase	Projected 1994	Increase	Projected 1995	Increase	Increase 1993-95
CENTRAL CAMPUS								
Business & Services (BUS)	126,503	159,934	26%	178,325	41%	191,507	51%	65,004
Communications (COM)	40,315	65,395	62%	91,410	127%	117,040	190%	76,725
Humanities (HUM)	350	820	134%	1,250	257%	2,090	497%	1,740
Natural Sciences (NAS)	16,273	17,945	10%	20,260	25%	22,965	41%	6,692
Occupational & Voc. Ed. (OVE)	42,031	47,545	13%	49,245	17%	49,731	18%	7,700
Social & Behavioral Science (SBS)	11,450	13,450	17%	13,930	22%	14,350	25%	2,900
Central Campus Total Contact Hours	236,922	305,089	29%	354,420	50%	397,683	68%	160,761
OPEN CAMPUS								
Academic Alternatives (ACA)	9,255	10,278	11%	11,150	20%	12,097	31%	2,842
Business & Professional Institute(BPI)	4,854	5,364	11%	5,928	22%	6,612	36%	1,758
Instructional Affairs (INA)	57,476	69,185	20%	90,153	57%	102,969	79%	45,493
Open Campus Total Contact Hours	71,585	84,827	18%	107,231	50%	121,678	70%	50,093
Institutional Total Contact Hours	308,507	389,915	26%	461,650	50%	519,360	68%	210,854

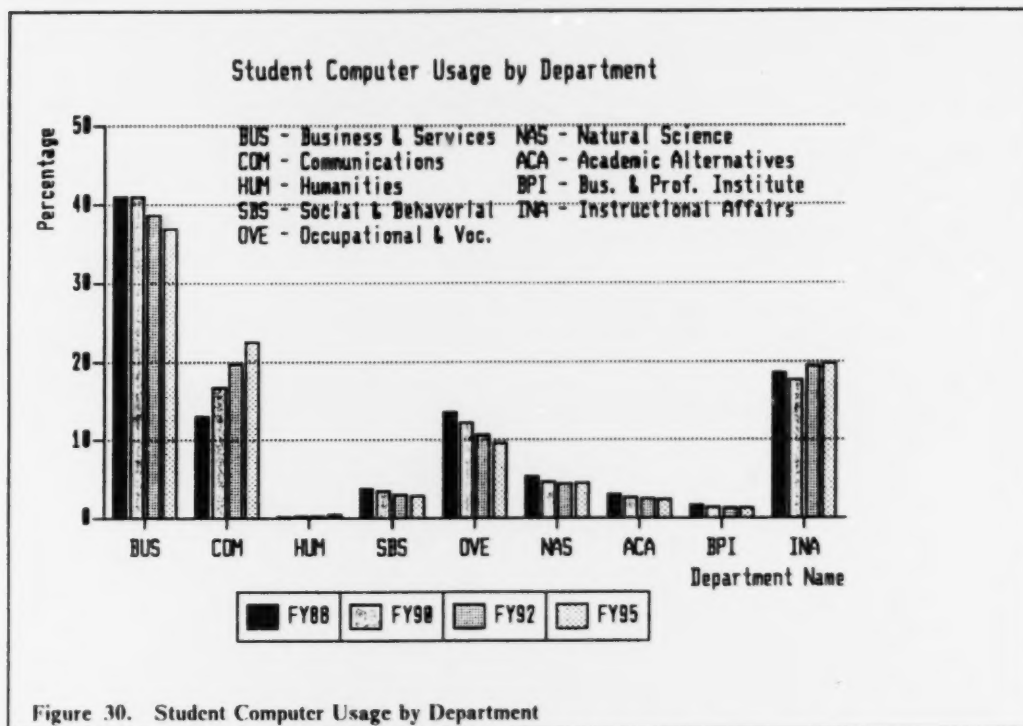
Figure 28. Summary of Growth Projections-Contact Hours for Academic Divisions

Central Campus is projecting the largest increase of 160,761 total contact hours by students or an increased usage of 68 percent. Central Campus is expected to increase by 70 percent or 50,093 contact hours. The overall growth of the institution is a 68 percent increase from fall FY92 to fall FY95; 26 percent in fall FY94, and 24 percent in fall FY95. Contact hours will increase by 210,854.

The following chart shows the total student contact hours by division from FY88 through the FY95 projections. Business and Services has the largest number of contact hours and Communications is second.



The following chart shows the percentage of student usage based on the student contact hours in each division. Business and Services has the largest utilization with 37 percent and the Communications division with 24 percent.



The Communications usage has increased dramatically over the last six years which resulted in lower overall percentages in other divisions.

Lab Utilization

The following figure shows the lab utilization. The lab utilization is the amount of time each computer lab at the college is used by students. It compares the time available vs. the current usage and defines a percent utilization based on the time available.

The chart is broken down by three categories of labs: Seaton Center, Regional Labs and Dedicated Labs.

- Seaton Center - computer labs used by students on a first come first serve basis. Open labs are available to students from 7:00 a.m. to 10:00 p.m. Monday - Thursday, 7:00 - 5:00 on Friday, 8:00 - 4:00 on Saturday and on Sunday 2:00 - 6:00.
- Regional labs - computer labs not located on Central Campus. Classes are usually scheduled from 7:00 a.m. to 10:00 p.m. Monday - Thursday, 7:00 - 5:00 on Friday, 8:00 - 4:00 on Saturday and on Sunday 2:00 - 6:00.
- Dedicated Labs - labs used by each division. These labs are supported by each division and operational hours are dependent on classes and staffing.

LAB AVAILABILITY VS. USE						
SEATON COMPUTING CENTER - FALL FY92						
<u>Computer Labs</u>	<u>Number of Stations</u>	<u>Hours Available Per Week</u>	<u>Qtr. Hours Available Per Station</u>	<u>Total Qtr. Hours Available</u>	<u>Total Hours Used</u>	<u>Percent Utilization</u>
Open Labs	110	83	913	100,430	70,782	70%
Classroom Labs*	148	76	837	123,876	66,193	53%
CADD Lab (Classroom/Open)	24	83	913	21,912	16,104	73%
Total SCC	282		2,663	246,218	153,079	62%
REGIONAL LABS - FALL 91						
<u>Computer Labs</u>	<u>Number of Stations</u>	<u>Hours Available Per Week</u>	<u>Qtr. Hours Available Per Station</u>	<u>Total Qtr. Hours Available</u>	<u>Total Hours Used</u>	<u>Percent Utilization</u>
DAVEA	21	63.5	699	14,699	11,299	***77%
Glendale Heights	6	8	86	516	507	98%
Lombard	2	56	616	1,232	278	23%
Naperville	30	80	880	26,400	21,353	***81%
Westmont	30	80	880	26,400	17,257	***65%
West Campus-K123	54	83	913	49,302	9,432	19%
Total Regional Labs	143		4,074	118,519	60,126	51%
DEDICATED DIVISIONAL LABS						
<u>Computer Labs</u>	<u>Number of Stations</u>	<u>Hours Available Per Week</u>	<u>Qtr. Hours Available Per Station</u>	<u>Total Qtr. Hours Available</u>	<u>Total Hours Used</u>	<u>Percent Utilization</u>
Advertising & Fashion Design**	12	60	660	7,920	7,084	89%
Architectural CADD Lab	6	5	55	330	240	73%
BPI Computer Labs	36	60	660	23,760	4,854	20%
Computer Information Systems	26	23	250	6,492	6,488	100%
Macintosh Graphics Lab	16	59	649	10,384	9,064	87%
Manufacturing Lab	15	47	517	7,755	6,523	84%
Nursing Lab	12	38	421	5,056	5,050	100%
Medical Records	15	31	336	5,040	5,050	100%
OCC Apple Lab	18	32	352	6,336	3,353	53%
OCC Non-Credit Lab	20	74	814	16,280	8,341	51%
Office Careers	75	79	869	65,175	53,456	82%
PLATO Lab****	10	76	836	8,360	90	1%
Travel & Tourism Lab	20	10	105	2,090	2,090	100%
Total Dedicated Labs	281		6,524	164,978	111,682	68%
Total Institution	706		13,260	529,714	324,887	61%
* SCC Classroom Lab usage based on Monday through Friday schedule. ** ADGSL Lab adjusted for up to three students to a workstation. *** Percentage adjusted based on classroom utilization. **** PLATO usage data incomplete.						

Figure 31. Lab Availability vs. Use

The figure columns are described as follows:

- *Computer Lab* represents the different open labs and classroom labs on campus.
- *Number of Stations* represents the current number of computer workstations in each lab. There are 735 workstations available to students for classroom and open work.

- *Hours Available Per Week* is the number of hours per week each lab is open. The Seaton Center and K123 is open the most at 84 hours per week.

Several labs are available on a limited basis because of staffing and number of courses that can utilize the lab. In several labs, the equipment is specialized which only allows certain courses to use the facilities. For example the Advertising and Fashion Design Lab use specialized hardware and software that can only be used by those classes. All the dedicated labs are specialized labs used by only one division.

- *Quarter Hours Available per Station* is the number of hours each quarter that students have access to each lab microcomputer. A 11 week quarter was used for open labs to determine hours available each quarter, i.e., the Seaton Center Open Labs would be available on an average of 84 hours per week or 913 hours per quarter per workstation for student access.
- *Total Quarter Hours Available* was calculated by multiplying the *Number of Stations* by the *Quarter Hours Available Per Station*. This value represents the total station-hours available for each lab.
- *Total Hours Used* was calculated for the Seaton Center and Regional lab from actual data. The dedicated labs usage was based on divisional contact hours. *Total Hours Used* represents the contact hours that were used by students in the fall quarter - FY92 for each lab.
- *Percent Utilization* is the total hours used divided by the total hours available to determine the average percent of time that each lab was used. The percent utilizations represents the average percent occupancy for each lab and is used as a measure of lab availability. At DAVEA, Westmont and Naperville the percentages were adjusted based on classroom use.

The following chart shows the average utilization by time of day for the Seaton Center open lab and classroom labs. The chart defines the time of day, hours available per week per workstation, hours used per week per workstation and the percent of utilization for the open labs. The classroom lab availability per week for the lab hours used on an average and the percent utilization.

WORKSTATION UTILIZATION SEATON COMPUTING CENTER							
Open Lab Workstation				Classroom Lab			
Time	Hours Available Per Week	Hours Used Per Week	Percent Utilization	Time	Hours Available Per Week	Hours Used Per Week	Percent Utilization
7:00	5.0	0.8	17%	7:00	5.0	0.2	5%
8:00	6.0	2.2	36%	8:00	5.0	3.4	69%
9:00	6.0	3.7	62%	9:00	5.0	3.3	65%
10:00	6.0	4.9	81%	10:00	5.0	3.3	66%
11:00	6.0	5.1	86%	11:00	5.0	2.9	58%
12:00	6.0	5.0	84%	12:00	5.0	2.8	57%
1:00	6.0	4.6	77%	1:00	5.0	3.7	74%
2:00	7.0	4.7	67%	2:00	5.0	3.5	39%
3:00	6.0	4.2	70%	3:00	5.0	1.3	26%
4:00	6.0	4.1	68%	4:00	5.0	0.6	12%
5:00	5.0	4.0	80%	5:00	4.0	0.8	19%
6:00	5.0	4.2	84%	6:00	4.0	2.5	64%
7:00	5.0	4.1	83%	7:00	4.0	3.3	82%
8:00	4.0	3.7	93%	8:00	4.0	3.4	85%
9:00	4.0	3.2	79%	9:00	4.0	2.6	65%
Totals	83.0	58.5	70%		70.0	37.5	53%

Figure 32. Workstation Utilization

The above table provides an understanding of the 53% classroom utilization and how during the week most classrooms are used even though we have only 53% utilization. This is caused by less use in the early morning hours and late afternoon. In the open labs utilization is 70% and there

is very high usage every day. When the utilization rate in open labs exceeds 70 percent many students are waiting for workstations. Since the 70% is an average for the quarter, during end of quarter utilization exceeds 90% and students become more frustrated in not being able to access a workstation.

The following table shows the lab availability and lab utilization for FY92 for each lab on campus.

<i>STUDENT COMPUTER USE-CONTACT HOURS-FALL</i>									
	<i>Total</i>	<i>FY92</i>		<i>FY93</i>		<i>FY94</i>		<i>FY95</i>	
	<i>Qtr. Hrs</i>	<i>Hrs</i>	<i>%</i>	<i>Hrs</i>	<i>%</i>	<i>Hrs</i>	<i>%</i>	<i>Hrs</i>	<i>%</i>
	<i>Avail</i>	<i>Used</i>	<i>Util.</i>	<i>Proj</i>	<i>Util</i>	<i>Proj</i>	<i>Util</i>	<i>Proj</i>	<i>Util</i>
SEATON LABS									
Classroom CADD	21,912	16,104	73%	16,810	77%	17,212	79%	17,302	79%
Open CADD	5,478	5,148	94%	5,298	97%	5,377	98%	5,503	100%
Classroom PS/2	92,907	48,970	53%	92,447	100%	133,994	144%	168,608	181%
Open Lab PS/2	87,648	59,199	68%	64,238	73%	69,277	79%	74,316	85%
Classroom Mac	30,969	17,224	56%	18,635	60%	18,956	61%	19,231	62%
Open Lab Mac	7,304	6,435	88%	7,846	107%	8,167	112%	10,449	143%
Total SCC	246,218	153,079	62%	205,273	83%	252,982	103%	295,408	120%
REGIONAL LABS									
DAVEA*, **	14,669	11,299	77%	15,474	44%	16,957	49%	18,440	53%
Glendale Heights	516	507	98%	591	115%	668	129%	745	144%
Lombard	1,232	278	23%	321	26%	357	29%	394	32%
Naperville**	26,400	21,353	81%	25,859	98%	38,193	145%	45,134	171%
Westmont**	26,400	17,257	65%	19,852	75%	25,840	98%	29,590	112%
West Campus-K123	49,302	9,432	19%	10,777	22%	12,012	24%	13,337	27%
Total Regional Labs	118,519	60,126	51%	72,874	61%	94,027	79%	107,641	91%
DEDICATED LABS									
Adv. & Fash. Design	7,920	7,084	89%	7,480	94%	7,608	96%	7,608	96%
Architecture Lab	330	240	73%	240	73%	240	73%	240	73%
BPI Computer Lab	23,760	4,854	20%	6,998	29%	8,421	35%	9,551	40%
Computer Info. Systems	6,492	6,488	100%	7,857	121%	8,907	137%	10,276	158%
Mac Graphics Lab	10,384	9,064	87%	9,128	88%	9,128	88%	9,128	88%
Manufacturing Lab	7,755	6,523	84%	6,763	87%	6,773	87%	6,783	87%
Nursing Lab	5,056	5,050	100%	5,075	100%	5,075	100%	5,075	100%
Medical Records	5,040	5,050	100%	5,105	101%	5,130	102%	5,155	102%
OCC Apple Lab	6,336	3,353	53%	3,353	53%	3,353	53%	3,353	53%
OCC Non-Credit Lab	16,280	8,341	51%	9,122	56%	9,875	61%	10,654	65%
Office Careers	65,175	53,456	82%	65,281	100%	71,831	110%	77,971	120%
PLATO LAB	8,360	90	1%	90	1%	90	1%	90	1%
Travel & Tour. Lab	2,090	2,090	100%	2,090	100%	2,090	100%	2,090	100%
Total Dedicated Labs	164,978	111,683	68%	128,581	78%	138,521	84%	148,013	90%
Total Institution	529,715	324,888	61%	406,728	77%	485,530	92%	551,062	104%
* FY92 based on 21 workstations, FY93, 94, 95 based on 50 workstations, networked lab scheduled for Spring, 1992 implementation.									
**Percentage adjusted based on classroom utilization.									

Figure 33. Student Computer Use-Contact Hours

Based on the projected contact hours for each lab we added the additional contact hours for each lab to each year and calculated this utilization based on the new projected usage. For example the PS/2 classroom in the Seaton Center utilization would increase from 53% in FY92 to 181% by FY95. This tells us which labs need additional workstations each year. The next step is to determine the acceptable utilization.

Lab Utilization Projections

The following figure shows the lab utilization projection based on 70%, 80%, 90% and 100% for each fiscal year. The table defines the additional workstations that would be needed based on the percent utilization for each lab.

LAB UTILIZATION PROJECTIONS										
Fiscal Year	Loc.	Equipment	Util. 70%	Stations Needed	Util. 80%	Stations Needed	Util. 90%	Station Needed	Util. 100%	Station Needed
1993	SCC	PS/2 Classroom	539	51	616	29	693	13	770	0
		PS/2 Open	647	4	739	0	832	0	924	0
		Mac Open	647	4	739	3	832	2	924	1
		CADD Classroom	539	3	616	0	693	0	770	0
		CADD Open	647	2	739	1	832	0	924	0
	Glendale Hgts Naperville Westmont		361	1	413	0	464	0	516	0
			616	12	704	7	792	3	880	0
			616	2	704	0	792	0	880	0
1994	SCC	PS/2 Classroom	539	77	616	67	693	60	770	53
		PS/2 Open	647	8	739	0	832	0	924	0
		Mac Open	647	0	739	0	832	0	924	0
		CADD Classroom	539	1	616	0	693	0	770	0
		CADD Open	647	0	739	0	832	1	924	0
	Glendale Hgts Naperville Westmont		361	0	413	1	464	0	516	0
			616	20	704	18	792	16	880	13
			616	10	704	7	792	3	880	0
1995	SCC	PS/2 Classroom	539	64	616	56	693	50	770	45
		PS/2 Open	647	8	739	6	832	0	924	0
		Mac	647	4	739	3	832	3	924	3
		CADD Classroom	539	0	616	0	693	0	770	0
		CADD Open	647	0	739	0	832	0	924	0
	Glendale Hgts Naperville Westmont		361	0	413	0	464	1	516	0
			616	23	704	17	792	11	880	8
			616	8	704	5	792	5	880	4

Figure 34. Lab Utilization Projections

Figure 34. Lab Utilization Projections

The utilization 70% column shows the number of hours each workstation can be provided in the specified lab. For example in the Seaton Center PS/2 classroom for FY93 each workstation would average 539 hours per quarter. The next column defines the number of additional workstations based on 70% that would be needed to meet the contact hour needs of the academic divisions. Continuing across the page are the needs based on 80% - 100% for each lab. We are recommending that we maintain a 70% utilization needs in order to provide acceptable services to the students.

Projected Workstation Needs

The projected increase in contact hours that was forecast for the next three years has been used to estimate the number of additional workstations that will be needed. The following figure shows the number of additional workstations that are needed based on the 70% utilization.

PROJECTED WORKSTATIONS - FY93-95				
Workstation Type	FY93	FY94	FY95	Total
IBM	70	115	103	288
Macintosh	4	0	4	8
CADD	5	1	0	6
Total Workstations	79	116	107	302

Figure 35. Projected Workstation Needs

We will need 302 additional workstations in FY93-95 with 79 in FY93, 116 in FY94 and 107 in FY95. Two additional classrooms will be needed each fiscal year with the remaining workstations for open labs. The 302 additional workstations only address the cross-discipline labs; this does not address the dedicated labs. The dedicated labs are the responsibility of each division.

Recommendations - Students

The following recommendations provide the hardware and software to meet the growth in student and faculty computing for the next three years.

- **Replace computer labs in K123 in K Building in FY93.**

Currently K123 in K Building has 50 IBM PC workstations for student use. The workstations need to be upgraded to use the most current software and networked for easy software distribution. We are recommending the lab be upgraded in FY93 at an estimated cost of \$200,000.

- **Provide computer lab for Communications Division in FY93.**

The communications division has had tremendous growth and is projecting a 100 percent increase in their computer usage by FY95. We are recommending a 30 workstation computer lab in FY93. As an interim solution until the additional space can be provided, we recommend moving the workstations from K123 to central campus where a communications lab may be setup and networked with the Seaton Computing Center. This will cost \$15,000.

- **Provide additional workstations for Business & Services in FY93.**

We are recommending moving 20 workstations from K123 to the Office Careers lab in the IC building in FY93. These units would be used to provide interim workstations until new units can be purchased in future years.

- **Expand LRC with Macintosh systems in FY93.**

Currently the LRC lab has only two Macintosh systems for student use. We are recommending adding two Macintosh systems to the lab in FY93. The estimated budget is \$7,000.

- **Upgrade LRC computer workroom in FY93.**

The LRC computer workroom contains 22 IBM PS/2 workstations. Each workstation needs to be upgraded with additional memory and a mouse device. The upgrade will allow the workstations to use current and future application software at a cost of \$10,000.

- **Investigate mainframe student applications vs. microcomputer based systems in FY93.**

Today several Computer Information Systems courses use the mainframe computer to teach instruction. Several systems exist that allow student mainframe systems to use microcomputer-based systems. Because of on-going concerns of security and administration

cost, we are recommending that the student mainframe systems be investigated for use on microcomputers in the Seaton Computing Center.

- **Develop computer recycling/replacement program in FY93.**

Currently several labs on campus have older technology which may or may not be suitable for use in the future. We are recommending the development of the plan to recycle/replace systems on campus to provide efficient use of resources.

- **Standardize application and systems software in computing labs in FY93 and FY94.**

When possible, steps should be taken to adopt and promote standards for the various general-use programs such as word processing, database, graphics, communications and operating systems software. We budgeted \$25,000 for FY93 and \$10,000 for FY94 to provide the additional funds to keep up-to-date with the most current academic software in the networked labs.

- **Upgrade Seaton Computing Center in FY93, FY94 and FY95.**

We are recommending increasing the memory in all the workstations in the Seaton Computing Center. This will allow us to use the newer technology software. This will cost \$30,000 for 200 workstations or \$10,000 each year.

- **Monitor system utilization in FY93, FY94 and FY95.**

Each computing lab should be monitored on a quarterly basis to collect usage data on the computer systems. This will provide accurate data on computer usage. We should continue to determine how long students are in the open labs and classrooms and what courses they are working on.

- **Upgrade LRC CD-ROM network in FY93, FY94 and FY95.**

Currently the LRC provides a CD-ROM network system supporting sixteen databases. The usage of the system continues to grow. We are recommending adding additional servers to provide ten additional databases for FY93-95. The estimated cost is \$4,000 in FY93, \$4,000 in FY94, and \$8,000 in FY95.

- **Expand dedicated labs where needed in FY93, FY94 and FY95.**

Growth in dedicated or individual labs used by divisions, where space is available, should be expanded. The divisions are responsible for budgeting for their own hardware and software for these labs.

- **Provide student open computer labs at regional centers in FY94.**

The growth of computer usage at the regional centers will require additional workstations for students. We are recommending the placement of a new 30 workstation open lab at Naperville and at Westmont in FY94. Each workstation will be connected to the existing network to provide efficient software distribution and support to students. This will cost \$75,000 at each site.

- **Expand testing labs at the regional centers in FY94.**

Currently a testing lab exists at several locations in the district to provide student placement tests for Math and English. We are recommending expansion of the testing labs to Westmont, Naperville, and Lombard in FY94. An estimated \$6,000 is budgeted in FY94.

- **Expand learning labs in FY94.**

Currently a learning lab exists on Central Campus to provide student self-paced courses through Academic Alternatives. Because of the growth of the learning lab, we are recommending the expansion of learning labs on central campus by three workstations and two at each of the regional centers at Naperville, Westmont, Lombard, and Glendale Heights. An estimated \$32,000 is budgeted for the expansion.

- **Expand testing lab on Central Campus in FY94 and FY95.**

Currently the testing lab supports 20 workstations to provide pre-course testing for students. With the growth of the number of students and increased number of tests, we are recommending the testing lab increase by 10 workstations in FY94 and 20 in FY95. We estimate the cost of \$24,000 in FY94 and \$60,000 in FY95.

- **Provide CDI expansion in FY95.**

We are recommending CDI (Computer Digital Interactive) be added to the existing computer LRC lab to provide students access to new technology. CDI provides interactive video applications to be used on a network. The estimated budget is \$10,000 in FY95.

- **Network institutional computing labs**

We are recommending the continued networking of student computer labs on campus. Any labs that can share software should be networked. All of the cross discipline labs will be networked by FY93. Each dedicated lab should be reviewed for possible networking. This recommendation is dependent on the campus-wide telecommunications plan.

- **Expand computing labs.**

Student contact hours for computing is projected to grow at a 23 percent annual rate. Additional computing classrooms, open labs, and specialized labs will be needed in order to meet the continuing growth over the next five years. It is recommended that the college add the appropriate space to support 400-500 more workstations. This is an estimated budget of \$2,500,000 for hardware and software. This amount is not included in the budget of this plan.

Faculty Hardware

Faculty Usage of Computing Resources

As described in the current environment section, most faculty must share microcomputers with other faculty or administrative staff in the divisional areas, or students in the various lab facilities. Faculty also have limited access to mainframe and minicomputer terminals. The importance of providing faculty with access to computers has been described in that section.

In the Academic Computing Survey, faculty were asked to prioritize where they would like to see an increase in microcomputer stations. The choices included placing computers in faculty offices, a shared faculty work area, computer lab facilities, or individual classrooms. The majority of faculty selected microcomputers in faculty offices as the highest priority followed by computers located in a shared faculty work area as second in priority. Additional microcomputers for lab or classroom instruction were placed at a lower priority. Half of the faculty who answered this question did not at the time use computers. It may be assumed that faculty selected computers for their offices as a necessary first step in becoming computer literate. This is a reasonable and productive choice since faculty must first become computer literate before using computers in instruction. The purchase of additional computers for faculty is necessary to support projected growth in use of computers and to promote new computer use.

Projected Usage of Hardware - Faculty

In the Institutional Plan for Computing three programs are in place to assist faculty in building computer skills and to incorporate the use of computers into instruction. A summary of the programs follows:

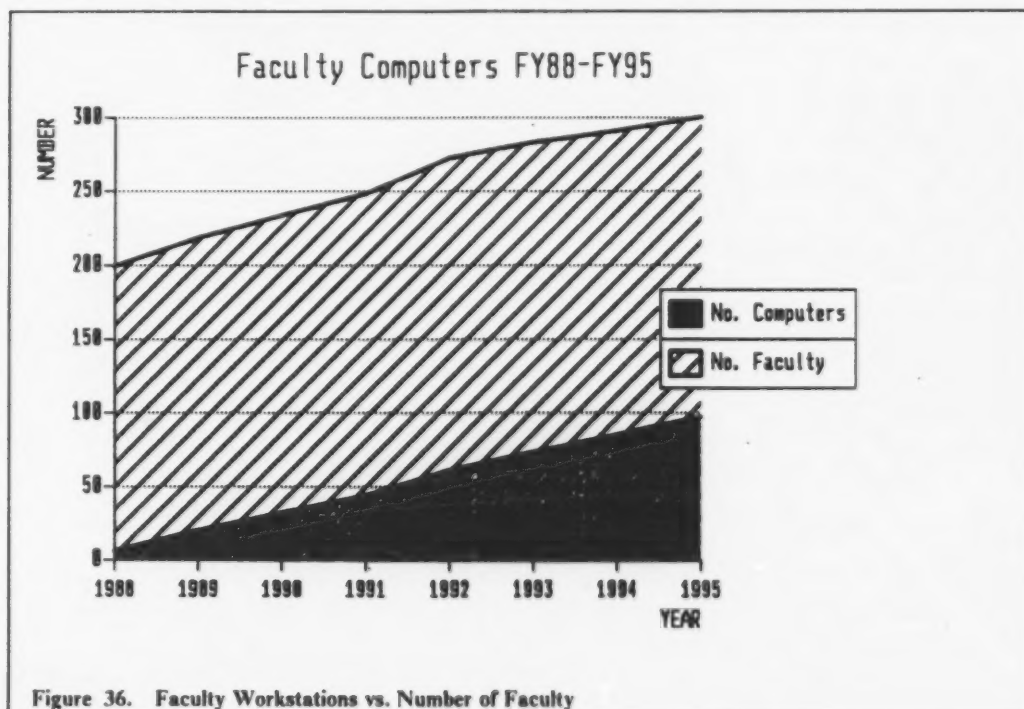
- **Faculty Hardware Program** was set up to assist faculty in the investigation of new technologies to be used for instruction. The funds can be used for the purchase of computer equipment in the exploration of new applications and the development of instructional software to be incorporated into the curriculum. Appendix M is the program guideline and application form.

- A Traveling '50' Program is an IBM PS/2 Model 50 computer system that is loaned to individuals or teams of faculty for use in the exploration of an application in computer technology for instruction. The loan period is a maximum of six months. Appendix N is a further definition of the program guidelines and application form.
- A Traveling 'MAC' Program is a Macintosh SE microcomputer system that is loaned to individuals or teams of faculty for use in the exploration of an application in computer technology for instruction. The loan period is a maximum of six months. Appendix O is a further definition of the program guidelines and application form.

We feel that the programs currently set up should continue for the next three years with the funding reviewed annually.

Over the last 5 years we purchased a combination of 61 IBM PS/2 and Apple Macintosh microcomputers each year and placed them into faculty suites. Each suite can serve up to six faculty from multiple disciplines. A Suite Computer Grant Program (Appendix P) was setup to select a suite location for the computer system on a faculty proposal for its use. ACPAC makes the final determination of the location based on the proposals. This program was very well received. Over 260 faculty members have access to these systems and are currently receiving training on how to use the systems. We will need to continue to provide additional microcomputers in all faculty suite areas. We are recommending the funding continue for 3 more years.

Faculty access to computer resources has also been evaluated and compared to the number of computers which are needed over the next three years. The following graph shows total number of faculty and numbers of faculty workstations available for faculty use.



Since 1988 faculty use of computers has increased dramatically. All full-time faculty will have access to a microcomputer in their office area. The current faculty to workstation ratio is five to one. This does not provide adequate access with the growth projected. The ratio needs to be an average of two faculty per workstation.

Recommendations - Faculty

The following recommendations will increase faculty access to computers and provide access to the newer technologies of computer use in instruction.

- **Upgrade workstations in faculty office areas in FY93.**

The current usage of the faculty suite workstations has increased significantly over the last four years. Many of the workstations have only one meg of memory and 20-40 megabytes of disk space. Up to six faculty may use each workstation resulting in limited space for programs and data for each faculty member. In addition memory is needed to use some of the new technology software available to faculty. We are recommending 60-80 megabyte disk drives and four meg of memory for each workstation at a cost of \$18,500.

- **Expand faculty work area in M Building in FY93.**

Currently we have one IBM PS/2 workstation available in M building for faculty access. With additional faculty moving to M building, we are recommending the expansion of the M building work area with one Macintosh II and one IBM PS/2 Model 70 and a laser printer. We are budgeting \$12,000 for this equipment.

- **Provide faculty office areas with microcomputers in FY93, FY94 and FY95.**

Continue to provide faculty office areas with microcomputers to be used in support of these activities:

- Preparation of course materials, management of instruction
- Instructor-student consultation concerning computer-related assignments
- Exploration of new applications, development of instructional software
- Networked access to lab software
- Networked communications with other faculty or support staff

Specific requests include the purchase of 36 additional microcomputers and software over the next three years, with 12 systems purchased each year with additional units to be placed in each faculty area. This will provide a faculty/workstation ratio of three to one. The estimated budget is \$36,000 each fiscal year.

- **Provide new workstations for checkout in FY93, FY94 and FY95.**

Currently we have five laptop computers in the library for checkout to faculty. The workstations are not capable of utilizing the newer technology software. We are recommending purchasing three additional units each year for faculty checkout. The estimated budget is \$10,000 for each fiscal year.

- **Provide funding for the purchase/investigation of new computer hardware technologies in FY93, FY94 and FY95.**

A Hardware Grant Program was created in 1988 to assist faculty in the investigation of new technologies. We need continued funding to meet faculty demand for new instructional/informational delivery systems (i.e., ROM Disk, interactive video, graphics). Funding of these projects are granted by a committee after review of the proposal and its impact on the related areas of instruction. A total of \$15,000 is recommended for this program for FY93, FY94 and FY95.

- **Expand the faculty work area to include multimedia capabilities in FY93, FY94 and FY95.**

The faculty work areas consist of two IBM model 70 and two Macintosh II workstations in the Seaton Computing Center and one IBM Model 70 in M building. Each faculty work area should be upgraded to include multimedia capabilities. A total of \$60,000 is recommended for this expansion with \$20,000 in each fiscal year.

- **Provide networking to all faculty suite workstations in FY94.**

A network will allow faculty to access the Seaton Computing Center, IBM mainframe and library system and to communicate with students (and students to communicate with faculty) in any of the networked labs. All faculty counseling areas need access to the mainframe to provide information to assist in student counseling. This will require interface cards for each workstation. The networking of faculty suites is recommended in FY94 at a cost of \$30,000. This recommendation is dependent on the campus-wide cabling system.

Software

Computer software is an essential part of the academic computing process and fully as important as providing sufficient access to hardware resources. In order to support the present use of computers and provide an environment that will encourage growth in the use of computers, certain software needs should be met. These include:

- Management of the college software resources in order to provide for:
 - Central storage of microcomputer software
 - Software security
 - Efficient distribution and access to students
 - Distribution of informational materials
- Maintenance of existing software which provides for upgrades, backup and replacement
- Support in the selection and evaluation of new applications
- Funding for expanded use of existing applications and the purchase of new applications

In FY88 we set up a centralized software budget to meet the software needs for the divisions to provide software tools to the faculty for management and learning. We set up a software program where faculty could fill out a proposal form requesting funding of the software. ACPAC reviewed each request and approval was based upon the potential benefit for an individual, potential impact on students relationship to an institutional goal and the cost/benefit. The centralized software budget is \$35,000. We need to continue the program for the next three years. Appendix O is a sample of the program qualification and application forms.

The following recommendations will improve faculty access to academic software.

- **Continue to provide funding for the purchase/investigation of new academic software applications in FY93.**

We are recommending an additional \$5,000 be included in the software program for faculty. This is currently provided in Computing and Information Systems operating budget. This will increase the budget to \$40,000 per year.

The funds can be used to provide faculty software for the following:

- New instructional/informational delivery systems.
- Software development tools, such as application software, authoring systems and programming languages.
- Specific software programs to be made available to all faculty as an aid to the management of instruction.
- **Setup an inventory of software for the college in FY93.**

As software is purchased, information will be collected for each item and added to a software database. Instructional areas will be notified of these purchases.

- **Involve more faculty in the search for instructional applications.**

Leadership is needed in organizing those activities which promote the search for new applications. This includes those steps involved in identifying and integrating software into instruction. These may include:

- Evaluation and development into the curriculum
- Selection and preview of software
- Review of software purchases
- Integration of software into instruction
- Integration of software into lab facilities and preparation of student support materials

Because faculty involvement is essential for the identification and evaluation of instructional applications, incentives need to be provided which will encourage them to take an active role in the process. Some incentives include release-time, summer pay, the possibilities of royalties, funding of research and development, projects and peer recognition for individual achievement.

Support

As described in the first section of the Academic Computing Plan, the support and services provided to faculty and students in using computers are an essential part of the Academic Computing process. Support in the use of computer is a major challenge to those individuals at the college which are responsible for the management of computer lab facilities and systems. The effort needed in supporting the academic computing process is expected to increase over the next three years for these reasons:

- As student use of computer increases, more lab aides will be needed to maintain current levels of support. With the new microcomputing center, additional lab aides will be needed to provide support.
- As more faculty begin to use computers, support will be needed to work with these faculty and search for new applications.
- As additional specialized computer systems are put into operation, individuals will be needed who are experienced in using these systems.
- As students and faculty are provided with new capabilities (i.e. microcomputer networking, and electronic mail the use of these unifying systems will also need to be supported.

Student Support

Student support in the use of computers is provided at three levels:

- The first level is the lab aides found in most, but not all of the computer labs. The support provided by the lab aides is limited to the basic operation of hardware and software but does not encompass specific questions about each application used in the lab.
- The second level of support is provided by the lab supervisors who manage the labs and handle special requests or circumstances.
- Additional questions that students have about using software related to class instruction are handled by the faculty member who is teaching the class. For the general use labs, this help is not available within the lab and is provided only at times that the faculty member is available to help the students. Student use of dedicated computer systems which are located in specific areas of instruction depends entirely on faculty for support.

Recommendations - Support

Based on projected increases in student usage and assuming that over the next three years the current level of student support will be maintained, we have projected additional personnel will be needed for the next three years. The recommendations follow:

- **Additional support for the Seaton Computing Center.**

The Seaton Computing Center came online fall 1990. The center has increased the operational hours in order to meet the demands of the class schedules. Currently the hours open exceeds the hours available by supervisor staff. We are recommending a twenty hour per week lab supervisor to provide lab-aide supervision and security to the building.

- **Provide part-time students support for Communications computing lab.**

With the added computing labs additional part-time students will be needed to provide support for the communications lab.

- **Establish a student support network.**

Part of the computing knowledge network referenced in the faculty support section can be devoted to the support of student computer use. Each class can have access to an information account on the network which allows for communication with faculty, lab support staff and other Academic/Administrative areas of the college. The student support network will improve communication between present areas of support and the increasing number of students using computers. This recommendation is dependent on the campus-wide telecommunications plan.

Faculty Support

Computer support is provided to faculty from several areas of the college. This support needs to grow to provide all faculty basic computer literacy.

In the Institutional Plan for Computing FY87-89 funds were made available to set up a grant program to assist faculty in building computer skills and to incorporate the use of computers into instruction.

A Faculty Development Program was set up to assist faculty in the improvement of his/her professional function relevant to computing at the college. This can include travel stipends to attend computer related conferences, seminars or course fees. A maximum award of \$250 per faculty per year is allowed each year. Appendix R is a copy of the program guidelines and application form.

Recommendations - Faculty

As stated earlier, faculty are using computer more and more each year. The following recommendations are necessary to maintain the same level of support.

- **Provide additional faculty consulting support in FY93 and FY95.**

The use of computers by faculty is growing at a very high rate. As faculty have access to more workstations each year, they need to be supported in answering their technical questions and their use of new technologies. It is important to respond to faculty in a timely manner. We are recommending two positions, Senior Academic Analyst in FY93 and a Senior Academic Analyst in FY95.

- **Continue staff development and computer training.**

Depending on their level of expertise, faculty should continue to increase their knowledge of computers. Below is a hierarchy of the different levels of computer literacy.

Level 1 - Knowledge of the operation and parts of the computer. Exposure to general-purpose applications.

Level 2 - Use of computers regularly for professional use.

Level 3 - Use of computers in existing curriculum.

Level 4 - Reassessment of curricular goals and investigation of new technologies.

The last two levels have the greatest impact on the use of computers in instruction. The last two levels cannot be attained until the first two levels of literacy are achieved. It is recommended that staff development and computer training activities continue to promote computer literacy at the college. Faculty need to be encouraged to attend these workshops. Faculty at the fourth level add to the colleges computer knowledge resource. This knowledge base can also be increased by funding faculty trips to other colleges and computer hardware and software seminars. The faculty development program should continue over the next three years.

We are recommending developing additional training courses utilizing new technology used in instruction. These include multi-media and critical thinking software.

- **Provide computer training to faculty for credit.**

A training program should be set up to provide faculty with the necessary incentives to use the computer for class management, class preparation and instructional support in the curriculum. Faculty should be encouraged to participate and assist in their support training. This can be accomplished by providing credit to the faculty enrolled in the workshops and release time for the faculty with the desire to assist in teaching workshops to other faculty. The continued support will be provided by Computing and Information Systems.

- **Organize and distribute documentation.**

It is essential to provide high quality documents which aid faculty in using computer resources and provide information that help in the investigation of new applications. This includes an index of computer hardware, software and computer expertise; lists of manuals and documents and where to find them; information about existing systems and applications; information about software resources; minutes of committee meetings and new projects that are currently in progress. It is recommended that a faculty guide to the college's computing resources be compiled and distributed.

Financial Considerations

The following figure provides a breakdown of the computing costs of Academic Computing by fiscal year. The capital amounts are one-time funds. The operating amounts are the recurring cost of supporting the equipment and software each year.

ACADEMIC COMPUTING					
<u>Item</u>	<u>Budget Estimate</u>		<u>Acquire</u>	<u>Time Frame</u>	<u>Production</u>
	<u>Capital</u>	<u>Operating</u>		<u>Installation</u>	
Hardware					
Student Resources					
Student Computer Labs					
(50) IBM PS/2 K123	\$100,000	3,000	Aug 92	Oct 92	Nov 92
(12) Printers K123	4,000	120	Aug 92	Oct 92	Nov 92
Network K123	70,000	2,100	Aug 92	Oct 92	Nov 92
Furniture K123	35,000	1,050	Aug 92	Oct 92	Nov 92
Communications Lab	15,000	450	Aug 92	Oct 92	Nov 92
Memory Seaton Center	10,000	300	Aug 92	Oct 92	Nov 92
Memory Seaton Center	10,000	300	Aug 93	Oct 93	Nov 93
Memory Seaton Center	10,000	300	Aug 94	Oct 94	Nov 94
LRC Computer Labs					
PC Memory/Mice Upgrade	10,000	300	Aug 92	Oct 92	Nov 92
CD-ROM Expansion	4,000	120	Aug 92	Oct 92	Nov 92
(2) Macintosh II	7,000	210	Aug 92	Oct 92	Nov 92
CD-ROM Expansion	4,000	120	Aug 93	Oct 93	Nov 93
CD-ROM Expansion	8,000	240	Aug 94	Oct 94	Nov 94
CDI Expansion	10,000	300	Aug 94	Oct 94	Nov 94
Regional Center Labs					
(30) IBM PS/2 Naperville	60,000	1,800	Aug 93	Oct 93	Nov 93
(7) Printers Naperville	3,000	90	Aug 93	Oct 93	Nov 93
Network Naperville	12,000	360	Aug 93	Oct 93	Nov 93
(30) IBM PS/2 Westmont	60,000	1,800	Aug 93	Oct 93	Nov 93
(7) Printers Westmont	3,000	90	Aug 93	Oct 93	Nov 93
Network Westmont	12,000	360	Aug 93	Oct 93	Nov 93
Testing Computer Labs					
(1) IBM PS/2 Naperville	2,000	60	Aug 93	Oct 93	Nov 93
(1) IBM PS/2 Westmont	2,000	60	Aug 93	Oct 93	Nov 93
(1) IBM PS/2 Lombard	2,000	60	Aug 93	Oct 93	Nov 93
(10) IBM PS/2 Central Campus	20,000	600	Aug 93	Oct 93	Nov 93
Net. Upgrade Cent. Campus	4,000	120	Aug 93	Oct 93	Nov 93
(20) IBM PS/2 Central Campus	40,000	1,200	Aug 94	Oct 94	Nov 94
Net. Upgrade Cent. Campus	15,000	450	Aug 94	Oct 94	Nov 94
Learning Computer Lab					
(2) IBM PS/2 Naperville	4,000	120	Aug 93	Oct 93	Nov 93
(2) IBM PS/2 Westmont	4,000	120	Aug 93	Oct 93	Nov 93
(2) IBM PS/2 Glendale Heights	4,000	120	Aug 93	Oct 93	Nov 93
(2) IBM PS/2 Lombard	4,000	120	Aug 93	Oct 93	Nov 93
(3) IBM PS/2 Central Campus	6,000	180	Aug 93	Oct 93	Nov 93
(5) HP Laser Printers	10,000	300	Aug 93	Oct 93	Nov 93
Total Student	\$364,000	\$16,920			

Figure 37. Academic Computing Financial Considerations (Part 1 of 2)

ACADEMIC COMPUTING (Continued)					
Item	Budget Estimate		Acquire	Time Frame Installation	Production
	Capital	Operating			
Faculty Resources					
Faculty Work Area					
(1) IBM PS/2 M Building	5,000	150	Aug 92	Oct 92	Nov 92
HP Laser Printer M Building	2,000	60	Aug 92	Oct 92	Nov 92
(1) Macintosh II M Building	5,000	150	Aug 92	Oct 92	Nov 92
MultiMedia Upgrade	20,000	600	Aug 92	Oct 92	Nov 92
MultiMedia Upgrade	20,000	600	Aug 93	Oct 93	Nov 93
MultiMedia Upgrade	20,000	900	Aug 94	Oct 94	Nov 94
Faculty Grants					
Suite Computer Grant	36,000	1,080	Aug 92	Oct 92	Nov 92
Hardware Grant	15,000	450	Aug 92	Oct 92	Nov 92
Suite Computer Grant	36,000	1,080	Aug 93	Oct 93	Nov 93
Hardware Grant	15,000	450	Aug 93	Oct 93	Nov 93
Suite Computer Grant	36,000	1,080	Aug 94	Oct 94	Nov 94
Hardware Grant	15,000	450	Aug 94	Oct 94	Nov 94
Software Grants		5,000	Aug 94	Oct 94	Nov 94
Faculty Suite Upgrade	18,500	555	Aug 92	Oct 92	Nov 92
Laptop Computers	10,000	300	Aug 92	Oct 92	Nov 92
Network Faculty Areas	30,000	900	Aug 93	Oct 93	Nov 93
Laptop Computers	10,000	300	Aug 93	Oct 93	Nov 93
Laptop Computers	10,000	300	Aug 94	Oct 94	Nov 94
Total Faculty	\$303,500	\$14,405			
Software					
Lab Software		25,000	Aug 92	Oct 92	Nov 92
Lab Software		10,000	Aug 93	Oct 93	Nov 93
Total Software		\$35,000			
Support					
Seaton Computing Center					
Assistant Lab Supervisor		10,000	Jul 92	Sept 92	Nov 92
Faculty					
Senior Academic Analyst		30,000	Jul 92	Sept 92	Nov 92
LAN Coordinator		25,000	Jul 92	Sept 92	Nov 92
Microcomputer Technician II		25,000	Jul 93	Sept 93	Nov 93
Information Center Analyst		25,000	Jul 94	Sept 94	Nov 94
Total Support		\$115,000			
Total Academic	\$867,500	\$181,325			

Figure 38. Academic Computing Financial Considerations (Part 2 of 2)

Figure 38. Academic Computing Financial Considerations (Part 2 of 2)

The total amount needed for Academic Computing is \$867,000 of capital funds and an increase of \$181,325 in the operating budget.

ADMINISTRATIVE COMPUTING

Overview

The complexity of the operation of the College of DuPage today requires automation to meet the internal and external reporting needs and the day-to-day operational needs. Most applications today are online. This provides users with immediate access to data stored on the computer for query or for reporting. In the Administrative computing section we provide a definition of what is administrative computing, what are the critical issues, the goals, recommendations for each major system and any new initiatives and costs for FY93-95.

Definition

Administrative computing includes all the information processing services which provide the college management and staff the data necessary to make decisions, record data, and carry out the day-to-day operations. The major administrative functions/applications include payroll, personnel, general ledger, accounts payable, accounts receivable, purchasing, student registration and records, financial aid, inventory, word processing, and management information system.

Issues

There are several issues pertaining to administrative computing that must be addressed to provide an acceptable level of service and support.

- Provide users adequate online response time, i.e., quick access to data
- Provide users with adequate disk space to store their data now and for the future
- Provide users with a security system to maintain the integrity of the data
- Provide users applications that are flexible and easy to maintain and modify
- Provide users applications that are accurate
- Provide users the tools to access their data and generate their own reports and analysis
- Provide users download capabilities to allow data stored on the mainframe to be transferred to departmental computers
- Provide users consulting support for their applications and systems
- Provide users with training on how to use an application
- Provide users with user documentation for ease of use
- Provide users with flexible operational hours
- Provide technical expertise to evaluate current and future applications

There are many other issues that affect administrative computing on campus. In the following sections we will address the administrative computing requirements of the college. We evaluated the survey data as it relates to the computing resources, and made recommendations as appropriate.

Goals

The goals of Administrative Computing are:

- To provide highest level of quality service support to all users.
- To provide fast, effective and efficient service to all users.
- To provide quality training to all users, faculty, and staff.
- To provide consulting support on the current technology available applicable to the user area.
- To maintain a strategy utilizing technology to keep the college in the mainstream.
- To provide computing recommendations that are in the best interest of the institution and meet the users needs.
- To be knowledgeable about current technology to effectively provide all users with the appropriate information for decision making.

Software

The development of large software applications is a major consideration in administrative computing. There are two approaches to acquiring software. One is to design and program the applications internally using college staff members. The other approach is to purchase an external package which meets the basic institutional needs. In the case of externally purchased software, modifications may be accomplished either internally or through contracting a consultant.

From the surveys we collected concerns/problems about the current major administrative applications. The following section evaluates each administrative application that currently exists, notes any enhancements, replacements necessary, and itemizes new applications that need to be acquired and/or developed in-house based on the users' needs.

Current Major Administrative Applications

Below is a list of the current major administrative software applications that reside on the mainframe and minicomputers on campus.

- Academic Alternative Administrative Network (ALAN)
- Box Office System (ARTSOFT)
- Capital Assets System (CDAS/CA)
- College and University Financial System (CUFS)
- Degree Audit System (CDAS/DE)
- Financial Aid System (CDAS/FA)
- Human Resources System (HRS)
- Library System
- Mailing List System (CDAS/ML)
- Management Information System (MIS)

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- Office Automation
- Scanning System
- Student Billing and Receivables System (CDAS/BR)
- Student Records System (CDAS/SR)
- Telephone Registration

The following section provides a description of each current application above; identifies the users of the applications, and the current problems/concerns; and makes general recommendations for each.

Academic Alternative Administrative System (ALAN)

Description: ALAN is a LAN based microcomputer system implemented in 1991 to replace the Hewlett Packard HP3000/RSVP system used by Instructional Alternatives to provide administrative support for the non-traditional flexible learning courses offered by Academic Alternatives. It provides an appointment scheduling system, comprehensive reporting and administrative support in the form of welcome letters, prompting letters and miscellaneous output including mailing labels.

Users: Academic Alternative's Instructional Alternatives faculty and staff located in the Instructional Center Learning Lab and at the Lombard, Glendale Heights, Naperville and Westmont Learning Centers.

Category: This is an existing LAN-based PC-FOCUS database using downloaded mainframe data for administrative support.

Concerns/Problems: The following concerns should be addressed:

- In early FY93 the course code will be expanded from nine to ten digits. The ALAN file structure will have to be expanded to reflect this change.
- Currently a COBOL program extracts a data file for the Academic Alternatives courses used by ALAN. This file is downloaded weekly into a PC-FOCUS microcomputer database. It would be a significant improvement if the Student System data could be extracted via mainframe FOCUS and downloaded via PC-FOCUS on a more frequent bases. Currently the process takes 35-40 minutes and is only done weekly.

Growth Requirements: We project the growth of the system as follows:

	<i>Current Records</i>	<i>FY93</i>	<i>Projected FY94</i>	<i>FY95</i>
Academic Alter. Student Records	7000	7700	8500	9320
Scheduling Records	2500	27505	3025	3330

Recommendations: The system is functioning very well its first year of operation. The student account number change must be done and recommend that the download mechanism be improved by using mainframe FOCUS as described above.

Box Office System (ARTSOFT)

Description: This system is a microcomputer-based local area network using software written and maintained by the vendor, Artsoft, Inc. The system consists of several IBM PS/2 microcomputers and printers running proprietary software providing automated management of the Art Center's three theaters. Functions provided include:

- Ticket processing for three facilities totaling almost 1,100 seats with a combined total of over 120 performances.
- Ticket reconciliations, both cash and credit sales.
- Ticket printing via a Boca ticket printer.
- Mailing label creation for marketing efforts.
- Accounting and management reporting functions.

Users: The Art Center staff responsible for the management of the facility are the principal users.

Category: This is an existing application that is operating adequately. It should be expanded with the addition of additional workstations.

Concerns/Problems: The system is working very well at present. Vendor maintenance support has been good. The current number of three workstations should be increased to allow additional staff in other locations in the Arts Center to use the system. Specific enhancements needed are:

- Expand mailing label feature by allowing a larger library file of mailing label information.
- Provide interface to mainframe-based mailing label system on campus to ease creation and updating of mailing lists by category.
- Add desktop publishing functions to the system to allow creation of programs and promotional materials in-house.
- Addition of at least two additional workstations and a backup ticket printer to provide greater system capacity.

Growth Requirements: The exact rate of growth cannot be directly predicted, although it is likely that the 120 engagements per year should increase steadily over the next several years and total ticket sales could exceed 60,000 in future years.

Recommendations: We recommend a phased expansion of the system hardware as needed over the next three years. We believe the application software is excellent and does not need revision in the future. Additional workstations and expanded reporting, mailing lists, and promotional activities should be developed. This will need to be budgeted by the department.

Capital Assets System (CDAS/CA)

Description: The Capital Assets System provides for the tracking of all inventory items owned and maintained by the College. This system also monitors the financial status, determines the location, and holds other data associated with an individual item's account. It was developed in-house using CICS and VSAM files.

Users: The Business Office is the main user of this system although other areas such as Campus Services would benefit from an expanded version of the system.

Category: The Capital Assets System was implemented in October 1990 and is functioning well.

Concerns/Problems: Currently there is an estimated 225 hours of administrative programming time required to completely eliminate the existing backlog of problems and enhancements remaining to be completed for the Capital Assets System.

Growth Requirements: We project growth of the Capital Assets System to be as follows:

	<i>Current Number</i>	<i>FY93</i>	<i>Projected FY94</i>	<i>FY95</i>
Inventory Records	27,850	30,000	32,000	36,000

Recommendations: None at this time.

College and University Financial System (CUFS)

Description: The College and University Financial System (CUFS) was purchased from American Management Systems (AMS) in 1987 and was implemented in July 1988. It is a complete financial package which will meet all the basic accounting and financial management requirements of the College and the Foundation.

Its functions include budgeting, planning, encumbrance control, expenditure accounting, cash disbursements, revenue accounting, accounts payable, accounts receivable, journal vouchering, grants management, travel accounting, and a comprehensive purchasing subsystem. Although each function operates independently, the system as a whole is unified via one database, one set of accounting procedures, and one account classification structure which is maintained through a series of master tables.

The system provides financial statements, trial balances, budget vs. actual reports, grants management reports, and transaction listings. There is a high degree of flexibility in reporting with varied roll up capabilities. A personal computer based reporting subsystem also provides for user initiated *ad hoc* reports. The system also provides the capability for departments to enter their own requisitions online.

Users: The Business Office is the principal user of this system, although the financial and budget reports are distributed to all administrative areas of the college.

Category: The system has been fully implemented and should meet the College Financial management requirements for many years.

Concerns/Problems:

- Enhancements to the system are provided by AMS through new releases of the package, and are included in our maintenance agreement. Keeping these changes synchronized with any in-house modifications requires careful monitoring.
- This is a very flexible and complex system and training of new employees will be required.
- Currently there is an estimated 720 hours of administrative programming time required to completely eliminate the existing backlog of problems and enhancements remaining to be completed for the Business System.

Growth Requirements: We project growth of the Financial System to be as follows:

	<i>Current Records</i>	<i>FY93</i>	<i>Projected FY94</i>	<i>FY95</i>
Purchase Orders	42,000	43,500	45,000	47,000
Invoices	44,000	46,000	48,000	50,000
Vendors	24,000	25,000	26,000	27,000
Account Budget Lines	19,000	19,600	20,000	21,600
Journal Entry/Cash Receipt	18,000	20,000	21,000	22,000

Recommendation: The system will provide the required financial management support needed by the college and that its flexibility will allow it to change as the college requirements change. The college should review new releases that are provided by the vendor. We should always maintain a release which is supported by the vendor.

Degree Audit System (CDAS/DE)

Description: This system will report, on demand, a student's progress toward a particular degree and/or certificate. It provides various areas information concerning completed, as well as remaining, requirements in order to assist the counseling and advising process.

Users: Records Office and Counseling

Category: This is an existing batch reporting system.

Concerns/Problems: The greatest concern from the users is to have the ability to request and receive the degree audit via an online function. We will analyze the effect this may have on the existing systems' response time. The existing release of this system does handle transfer credits.

Growth Requirements: We project the growth of the system as follows:

	<i>Current Records</i>	<i>FY93</i>	<i>Projected FY94</i>	<i>FY95</i>
Requirements	16,700	21,000	30,000	38,000
Student Exception	1,000	2,000	4,000	6,000

Recommendation: The on-line degree audit function would be beneficial in providing information to the student within an advising session. The college should upgrade to the newest release to provide use of the transfer credit function.

Financial Aid System (CDAS/FA)

Description: The Financial Aid System was developed internally to integrate with the student system. The system's main function involves processing financial aid awards including Flat, Illinois Student Assistance Commission, Pell, IVG, and Illinois Guaranteed Loans. Financial Aid application, tracking, verification of enrollment and regulatory reporting are other major functions of this system. The system is an online application with batch reporting capabilities.

Users: The Financial Aid Office is the principal user of this system with the Business Office requiring some reporting capabilities.

Category: The Financial Aid system is functioning reasonably well. Major change is not currently needed although some enhancements described below are needed. This system is viable but in need of continued maintenance and improvement.

Concerns/Problems:

- Continued maintenance is needed for this system due to the changing federal and/or state regulations regarding financial aid awards. The system undergoes maintenance at the end of the fiscal year to set up the programs for the new fiscal year.
- A major concern of the existing system is a need for updated and improved user documentation. This is especially important since major changes to online screens, calculations and reports have been made.
- Currently there is an estimated 1,230 hours of administrative programming time required to completely eliminate the existing backlog of problems and enhancements remaining to be completed for the Financial Aid system.

Growth Requirements: We project growth of the Financial Aid System to be as follows:

	<i>Current Records</i>	<i>FY93</i>	<i>Projected FY94</i>	<i>FY95</i>
Master File	103,000	120,000	145,000	165,000

Recommendations: We recommend that the required improvements be made in-house with Computing and Information Systems or programming consultants. We believe the major modifications to this system have been successful. This system should provide worthwhile service for several years until the acquisition of a comprehensive integrated student database system.

Human Resources System (HRS)

Description: The Human Resources System is a VSAM-based application providing for the full payroll function and reporting as well as maintaining a personnel database containing employment, history, demographic, benefit and personal information. Salary, time reporting, job status, employee history, personal data and benefit data are updated and stored in integrated VSAM files.

This system was purchased from Integral Systems in late 1985 and was implemented in August 1987. This comprehensive database product was modified to tailor it to our hardware and user processing requirements.

Users: Human Resources and the Business Office are the principal users of the system, including the responsibilities for data entry and updating.

Category: The system has been fully implemented. It will require ongoing program maintenance to apply tax, benefit, and other regulatory and institutional modifications. A new release was applied in August 1991 that converted the system to a CICS/VSAM-based environment.

Concerns/Problems

- A short range as well as continuing concern is the need to apply upgrade releases to the HR package.
- Additional continued maintenance will be required to apply tax and statutory changes to the system. It is important that system modification be closely examined concerning their impact on both regular tax and statutory changes as well as vendor release upgrades.
- Applicant tracking is not contained in our current system and a need exists to develop or purchase a system that will interface with the personnel data on this system.
- Need ability to produce custom reports. Should also be able to download data to a PC.
- Need to implement a cafeteria style benefits package for fringe benefits.
- Need voice mail ability to interact with applicants regarding job openings and employees regarding handbook procedures and benefits.
- An imaging system is needed for data filing of employees and applicants.
- Currently there is an estimated 2,090 hours of administrative programming time required to completely eliminate the existing backlog of problems and enhancements remaining to be completed for the Human Resource System.

Growth Requirements: We project the growth of the system as follows:

	<i>Current Records</i>	<i>FY93</i>	<i>Projected FY94</i>	<i>FY95</i>
Employee Records	5,630	5,800	6,000	6,200
History File	46,000	49,000	52,000	55,000

Recommendation: Implement an end user query tool that not only provides adhoc reporting, but PC download capabilities as well. Should also allow users to produce custom reports that can be saved for future reference. We will be investigating imaging products available for implementation in Human Resources.

Library System

Description: The library's automated system uses a Convergent Technology microcomputer. Presently, it is able to support the hardware being used within the library, listed below. The first two modules of the system were installed in 1989; the most recent module, the materials booking module, was installed in 1991.

The Library System is a "turnkey" system both for system and application software. The UNIX System V - based system, as well as application code, is developed, maintained and enhanced by the vendor, Innovative Interfaces, Inc.. System changes are applied either by magnetic tape supplied by the vendor or via vendor dial-up access directly into the library system from their location.

Category: The Library Systems is installed and operational. It provides modern hardware, efficient software, and good vendor support. It is in need of phased enhancements to provide greater functionality and speed as the number of users increase.

Concerns/Problems

- A total upgrade of the CPU will need to be considered within two to three years in order to ensure appropriate response time for all functions.
- Additional support equipment (terminals, printers, ports, scanners, and modems) will need to be added annually to support all College requirements and locations of needed terminals.
- Additional memory will be needed as additional terminals and data are added to the databases.
- Accessing CD-ROM programs housed within the LRC will need to be explored; if so, additional printers will be needed.
- Networking the system throughout the College should be explored in the next one to two years. Funds will be needed to allow this to happen.
- Accessing and using the system off campus via modems should be explored in the next one to two years. Funds will be needed to support these capabilities.
- LRC needs to plan for the completion of SRC+ and the needed terminals, printers, etc. for this additional space. LRC's own UPS will be needed and should be included in the building fund.
- As Innovative Interfaces develops desirable new modules, funds will be needed to acquire these modules.
- A cycle to replace system equipment should be implemented in FY94 to replace equipment more than six years old (terminals, scanners, printers, etc.).

Growth Requirements: We project the LRC will experience continued steady growth in the number of items in the collection, patron use, and a number of terminals needed to meet user demands.

Circulation is projected to be 275,000 for FY93 with 80,000 patrons. We believe for LRC services the recommendations listed below will meet the continuing demand.

The projected growth of this system for the next three years follows:

	<i>Current FY92</i>	<i>FY93</i>	<i>Projected FY94</i>	<i>FY95</i>
Number of Patrons	62,000	70,000*	75,000	80,000
Circulation	260,000	330,000	429,000	557,770
Patrons Transactions	859,980	945,978	1,040,576	1,144,634
Bibliographic Records**	146,166	152,166	158,166	164,166

*This figure has been lowered due to removal of inactive patrons

**Does not include LRC Long Range Plan recommendations

Recommendations: We recommend that the Library System be enhanced by the addition of more terminals and printers, greater connectivity (NETWORK), necessary CPU upgrade, and greater off-campus use of the system. Specifically we recommend:

- Acquiring three terminals/ports, scanners during FY93 and FY94.
- Acquiring five terminals/ports during FY95 (completion of SRC +).
- Upgrading the CPU in FY95.

Mailing List System (CDAS/ML)

Description: The Mailing List System is an in-house system developed for the Public Information Office. It is written in COBOL language using CICS and VSAM files. The system currently has approximately 130,000 members divided into 550 lists.

The general functions of the Mailing List System include the following:

- Easily create and maintain different lists using the same members
- Display all or selected lists
- Print reports and labels
- Sort or select individual members in lists
- Relate members in lists from person-to-person or from business-to-business

Category: This system was recently developed and implemented in October 1991.

Concerns/Problems: None at this time.

Recommendations: None at this time.

Management Information System (MIS)

Description: This is a reporting system only at this time. It extracts summary and detail data from the College of DuPage Administrative Systems (CDAS) to provide empirical information required for institutional planning and reporting and the Illinois Community College Board regulations. Other functions include providing data required for State and Federal reporting and forecasting trends for strategic planning.

The MIS system is currently composed of the following component reports:

- MIS6010 and MIS6015 Summary of A1 report-(Student enrollment in programs and program graduates)
- MIS7010 Total Enrollment Characteristics Options
- MIS7015 Staffing Profile Curriculum Options
- MIS3000 Facilities Profile
- MIS4000 Mailing Labels
- SPSSX Mainframe Statistical Analysis
- MIS4050 Series ICCB Graduate Tracking
- AS Trendbook Historical Summary of College Statistics

Users: The principal users of this system output are all college administrative departments. Secondary use is made of the MIS output by the Board, faculty, staff, and students.

Category: This is an existing batch reporting COBOL-based system requiring major enhancements.

Concerns/Problems

- Scheduling can be a problem due to the large volume of records that must be read.
- The MIS7000 data should be made readily available, perhaps via electronic mail.
- A major analysis of the annualized records is needed for use in a research student flow model.
- An easily accomplished downloading method should be established to allow the Research Office access for personal or Application System (AS) computing use.
- Currently there are 430 hours of programming backlog needed for the MIS System.
- Need to upgrade SPSSX from release 2.1 to 5.0.

Growth Requirements: We project the following growth for this system:

	<i>Current Records</i>	<i>FY93</i>	<i>Projected FY94</i>	<i>FY95</i>
MIS Annualized Records	58,000	65,000	74,000	83,000

Recommendations: MIS is a reporting system lacking much flexibility to meet the users' changing requirements. We recommend that the MIS System continue to be developed inhouse to meet users' needs. When the current Student System is modified in FY92, most of the concerns for the MIS will be addressed. This should provide for an effective method of dealing with an integrated MIS.

Office Automation

Description: Development in computers, telephone systems and related office products are rapidly affecting the manner in which the administrative process is accomplished. Office activities supported through technology are usually referred to as *office automation*. Sometimes this term restricts one's vision of the total effect that technology has on an institution. Too often, office automation is seen as the implementation of word processing systems used primarily by secretarial and clerical staff even though actual experience has shown that executive productivity increases significantly when the full office automation concept is implemented.

We must consider the concept of office automation for management support with the realization that *management* is carried out by a team composed of the executive/administrator, the secretary, and staff in the organization. When viewing administrative activities in this broad sense, one begins to realize the extensive and positive impact that office automation support can provide to the management process. Automation affects the manner in which administrators interact with one another and with their staff and the way instructors can interact with students.

Office automation provides support in four major areas: decision support, calendar management, electronic mail, and word processing.

- Decision support provides staff the ability to use data for analysis and decision making. The decision support is currently provided through FOCUS and IBM AS, Application System on the mainframe and various microcomputer products such as PARADOX and dBase. The capability to easily transfer data from the host or mainframe computer to microcomputers is needed. This allows staff to create and use personal databases on their microcomputers for analysis and reporting.
- Calendar management provides the ability to schedule individuals and related resources such as meeting rooms in an efficient manner. This includes the management of the administrator's personal business schedule. The ability for an individual to examine several business schedules, to arrange meetings to schedule support resources such as room reservations and audiovisual support items all improve the use of time and institutional resources. This is currently not available at the institution.
- Electronic mail provides the ability to transfer documents and messages to any user on the system. This includes proposals, memorandums, board policy and procedures, and other material among staff, administrators, faculty, and students, both on and off campus. Electronic Mail is currently available institution wide via a simple E-mail system under the CMS mainframe operating system. This system does not have sufficient features for wide use.
- Word processing provides the ability to prepare, format, print, store and retrieve documents electronically. Word processing in the use of automated resources to prepare, edit, and print institutional correspondence. Sophisticated microcomputer-based and mainframe-based software is available to improve the speed, ease, and accuracy of this function as well as produce a near typeset quality product. Most areas on campus have some form of word processing. Major word processors include OfficeWriter, WordPerfect and Microsoft Word.

Users: All administrative areas as well as a large percentage of the academic community are potential users of the integrated office automation system.

Category: Office automation is supported by Computing and Information Systems, and to a lesser extent in most administrative and academic areas of the institution. It is in the process of continued implementation and enhancement.

Concerns/Problems: The basis of any integrated office automation system is the existence of data in an automated format created through word processing or other decision support software combined with a communications network linking administrators and other staff electronically. The major concerns to be addressed to incorporate a fully functioning office automation system are listed below:

- Besides establishing hardware compatibility, the institution needs a communication standard throughout to provide connectivity among the compatible hardware. This communication standard will allow documents created on one system to be transferred and shared on other systems within the college.
- Training traditional office staff and managerial/administrative personnel to fully use and benefit from an integrated office automation system is a task requiring a significant amount of time and effort. Computing and Information Systems, if it is to provide responsive and thorough assistance to current and proposed office automation users, must continue to provide staffing with specialized expertise to be able to select, train, and administer office automation.

- New products used in office automation, mainly Windows based must be carefully analyzed and integrated.

Recommendations We recommend continued use of OfficeWriter software as the standard supported word processing package for administrative use. Use of Windows-based products will be supported in the future. We are recommending developing strategies to provide increased connectivity throughout the institution linking standalone microcomputers, local area network, and 3270 terminal devices whenever appropriate. The campus telecommunications plan will have a large impact on the nature and growth of this application.

Scanning System

Description: The NCS 7008 Optical Mark Reader was purchased from National Computer Systems in 1979. At that time, it replaced an OpScan 100 Optical Mark Reader that became obsolete and difficult to maintain.

The NCS 7008 allowed us to expand the scanning process to academic test scoring and evaluations as well as administrative surveys, questionnaires and evaluation statistics. This is in addition to the processing of Mid-Quarter Enrollment Verification forms and Final Grade forms that occurs on a regularly scheduled basis.

Users: Academic Faculty and Deans, Administrative Offices, Records Office, Registration Office, Student Activities, Classified Personnel Association and Nonprofit Organizations.

Category: The NCS 7008 Optical Mark Reader technology and hardware configuration is over twelve years old. The system is functional, but uses the magnetic reel tape to transfer data to the mainframe at a time when we are attempting to eliminate all tape reel operation and convert to tape cartridge.

Concerns/Problems: The major concern is that this unit uses the magnetic tape reel process. Our goal is to eliminate all tape reel drives in the computer room and use only the tape cartridge system. The NCS 7009 Optical Mark Reader transfers data to tape reels and does not accept the cartridge tape system. Since we use the Optical Mark Reader on a daily basis, we would have to maintain at least one tape reel drive in the computer room and incur the monthly maintenance expense to keep it functional.

Growth Requirements: We project the use of the Mark Optical Reader to be as follows:

Type	FY91	FY92	FY93	FY94	FY95
General Purpose Answer Sheets	49,000	50,500	52,000	54,000	56,000
Final Grade Sheets	12,273	12,749	13,225	15,000	16,000
Mid-Quarter Enrollment Verif.	12,872	13,277	13,682	15,200	16,500

Recommendation: We recommend replacing the current Mark Optical Reader with an NCS OpScan 10 Model 30 microcomputer based system. The technology is considered state-of-the-art and provides us with the following advantages;

- Migrate away from tape reel usage by uploading the scanned data from diskette to mainframe
- Reduce the cost of monthly maintenance on newer technology
- Total dimension of the NCS OpScan 10 Model 30 is approximately half that of the NCS 7008 and we would regain needed floor space
- Open design allows direct access to simplify cleaning and forms removal
- OpScan software is menu driven and allows for easier programming capabilities

The estimated system cost is \$30,000. The cost recovery of the system is three years from the difference between current maintenance cost and projected maintenance costs of a new system.

Student Billing and Receivables System (CDAS/BR)

Description: This system is a major module in the CDAS online system. It manages all student financial data related to the Student Record System and the Financial Aid System. The system maintains the student's account through the payment cycle (cash, financial aid, credit card). In addition to producing financial reports, the system prints schedule/bills and maintains history information.

The Billing and Receivables System (CDAS/BR) maintains two major files, the Master Detail file (MDF) and the Subcode file (BRSCF). The MDF maintains detail billing information on each student while the Subcode file contains information relating to a five-digit code identifying various types of transactions allowed.

Users: The principal users of this system are the Business Office, the Financial Aid Office and the Registration Office.

Category: This system needs continual updating because of the number of federal and state changes that are required.

Concerns/Problems

- The bill collection process for overdue accounts is not being handled by the current system. A program was written to extract overdue accounts to print schedule/bills and/or pass the data through AS for further processing in the Finance Office.
- Only six quarters of detailed student transactions are kept online. The Business Office needs to retain all outstanding balances for students online rather than rolling them over.
- Manual adjustments to the accounts of students on financial aid are not being handled by the system in an appropriate manner.
- An automated collection process needs to be implemented that would track and notify overdue student accounts.
- The residency codes for a student need to be associated with an effective date. The previous address also needs to be stored when residency changes.
- Currently there is an estimated 200 hours of administrative programming time required to completely eliminate the existing backlog of problems and enhancements remaining to be completed for the Billing and Receivables System.

Growth Requirement: We project growth of this system for the next three years to be as follows:

	<i>Current Records</i>	<i>FY93</i>	<i>Projected FY94</i>	<i>FY95</i>
Subcode	1300	1350	1400	1450
Master Detail File	1,580,000	1,625,000	1,670,000	1,720,000

Recommendation: Since the present system will remain in place for at least five years, we recommend that steps be taken to alleviate the major problems. This includes developing a subsystem which monitors the steps in bill collection and which interfaces with the current system. The above concerns/problems will be addressed within the recommendation for the Student Records System.

Student Records System (CDAS/SR)

Description: This system develops and maintains all data necessary to support student functions. These functional areas include admissions, scheduling, registration, grades, and transcript generation. Information is provided for instructors including courses, classes, and fees involved.

The Student Record System (CDAS/SR) is responsible for all information pertaining to a student's academic record as well as information concerning all possible course offerings. Eight major files are required to provide this information:

- Student Key File (SKF) - contains demographic data.
- Student Key File #2 (SKF2) - contains degree information, activity codes, MPE scores, etc.
- Student Term File (STF) - contains information regarding the student classes taken each quarter.
- Course Inventory File (CIF) - contains information concerning each course the institution has received permission to offer.
- Course Term File (CTF) - contains individual class section information.
- Class Roster File (CRF) - contains a list of all students enrolled in each section of each course within a term.
- Transcript Text File (TTF) - contains information required for production of student transcripts.
- Publishers Comment File (PCF) - contains information concerning individual course requirements or prerequisites.
- Major Code File (MCF) - contains information regarding all major codes and their corresponding state information. It may be used for all programs needing major code information.

Users: The major users of this system are: Records, Registration, Instructional Services, Business Office, Financial Aid.

Category: This is in need of replacement due to its cumbersome file structure, file size and amount of modification required.

Concerns/Problems

- The number and complex nature of the interactions among the files of this system make modifications, enhancements or error corrections extremely difficult. A new system should possess an integrated file structure allowing easier access to data elements that currently reside in separate files.
- The SR System currently has a backlog of 1,450 programming hours to satisfy current user requests.
- Improved transcript processing including the scheduling of transcript generation is needed.
- More efficient entry of grades from special programs such as independent study is needed. Currently, grades are hardcopied and subsequently, data is entered into the student records system.
- Sophisticated online degree audit and transfer credit evaluation methods are needed.
- The current course number format is very restrictive. The growth of the College has translated into an increase in the number of courses offered. Also, a need exists to standardize the numbering convention used between central and open campus in order to provide accurate comparative reporting for the state and the College. This will be addressed within the Student System upgrade project scheduled for FY92.
- Need to address 1993 Admission Requirement changes.

Growth Requirements: We project the growth for the SRS files listed below as follows:

	<i>Current Records</i>	<i>FY93</i>	<i>Projected FY94</i>	<i>FY95</i>
Class Roster	1,750,000	1,855,000	1,960,000	2,100,000
Course Term	136,000	144,000	152,000	160,000
Student Key	383,000	395,000	414,000	426,000
Student Key #2	202,000	214,000	233,000	245,000
Student Term	1,900,000	2,015,000	2,135,000	2,260,000
Transcript Text	335,500	350,000	365,000	380,000

Recommendation: We recommend an upgrade of the existing Student Records System that would consist of the restructuring of the major VSAM file layouts. Modifying the existing files to suit the future needs of the College will enable the completion of a variety of programming requests. These programming requests include the expansion of the course number, an automated collection process for overdue student accounts, storage of unique (ALPHA) course descriptions for transcript handling, and automated 'drop' capability for non-payment after ten days. Many of the other programming requests, that are feasible to be completed within that project's deadline, will also be addressed. This project was started in fall 1991 and is scheduled for completion prior to fall 1992.

Telephone Registration

Description: This system is a PC-based product that interfaces with the CDAS online system. It allows students to perform registration functions via a touchtone telephone. It has been developed to allow students to add a class, drop a class, hear their class schedule, hear their outstanding balance and pay by credit card, and modify their personal identification number. It is defined to handle fifteen telephone calls simultaneously.

Users: The principal users of this system are students.

Category: This is a PC-based system that interfaces with the mainframe. As needs arise, more telephone lines will have to be defined to the system.

Concerns/Problems: None at this time.

Recommendations: Add eight more telephone lines to system in FY94.

New Administrative Applications

The following figure lists new application needs by various administrative areas at the college. This list is not exhaustive, but illustrates the magnitude of computer related applications that could be developed in-house on the mainframe or microcomputer products. Alternatively, they could be purchased and implemented as mainframe or networked microcomputer packages. The following list includes the area requesting the application, the type of application requested, and comments based on a preliminary analysis by Computing and Information Systems to determine whether the best solution would be an IBM mainframe application, LAN-based system or a stand-alone microcomputer application. Each of these items requires further analysis and the assignment of an overall priority.

<u>Area</u>	<u>Type of Application</u>	<u>Comments</u>
Admission/Records/ Registration	1993 Admission	Mainframe-Based
	Requirement Changes	
	Transcript Processing	Mainframe-Based
	Enhancements	
	Online Degree Audit	Mainframe-Based
Arts Center	Electronic Transmission of Transcripts	Mainframe-Based
	Accounts Receivable	Microcomputer-Based
	Fund Raising	
	Color Printing	
	Voice Mail	
Auditor	Mailing Label System	
	Desktop Publishing for Advertising, Programs	Microcomputer-Based
	Data Sampling System	
	Equipment Inventory	Mainframe-based
	Disposal Reporting	
Auxiliary Services	Payroll Reporting	Mainframe-Based
	Enhancements	
	Fiscal Yr./Calendar Yr.	Mainframe-Based
	Position Control-History	
	Inventory System - Supplies, Print Shop	Microcomputer-Based
Business and Professional Institute	Foodservice System	
	Desktop Publishing-Signage	
	Mailroom Postage	
	Expense System	
	Enhanced Mailing List System	Microcomputer-Based
Business and Services	Program Summary Report	Microcomputer-Based
	System Enhancements	
	Off Campus Student Evaluations	
	Part-Time Instructor Evaluation	
	Departmental Scheduling	Mainframe-Based
Campus Services	PT Faculty Demographics	Mainframe-Based
	Vehicle PM and Tracking	Microcomputer-Based
	Equipment Maintenance History	
	Facility Scheduling System	
	Enhanced CPP System	Microcomputer-Based
Career Placement	Job Matching System	Microcomputer-Based
	Retention System for Student - Records-Download	Mainframe-Microcomputer
	Scheduling System	
	High School Articulation Program	Microcomputer-Based
Communications	Equipment Transfer	Mainframe-Based
	Simplified CAS	
	Nametag Preparation Software	Microcomputer-Based
	Calligraphy Software	
	Scheduling System	
Community Events	Signage System	
	Spreadsheet Applications	
Financial Affairs	Position Control	
	Report System for CUPS	Mainframe-Based

Figure 39. New Application Needs for the Institution (Part 1 of 3)

Health and Special Services	Mailing Label System	Microcomputer-Based
	Physical Exam Recording System	Microcomputer-Based
	Health Education	Microcomputer-Based
	PE Health Insurance Verification	Microcomputer-Based
	Vocational Technology Program-Academically Disadvantaged	Microcomputer-Based
	Scheduling System	Microcomputer-Based
Human Resources	Statistical Packages	
	Position Control	Mainframe-Based
	Job Description File	Mainframe-Based
	Download Capabilities-HRS	
	Employment History Access	
	Cafeteria Benefits	
	Package Enhancements	Mainframe-Based
	Imaging/Applicant Tracking	Mainframe-Based
Instructional Alternatives	Online Employee Handbook	Mainframe-Based
	Voice Mail Application System	Mainframe-Based
Instructional Design	Tape Checkout System	
Instructional Design	Marketing Database	Microcomputer-Based
	Project Management	Microcomputer-Based
	Accounting Package	Microcomputer-Based
	Interactive Video Applications	
Instruction-Central Campus	Access Part-Time Staff Data	
	Room Scheduling	
	Prerequisite Registration	
Media Productions		
	Networking-Enhanced	Microcomputer-Based
	Production Services Operation	
	Project status Monitoring System	Microcomputer-Based
	Facility Scheduling	
Occupational & Voc. Ed.	Media Penetration	
	Reporting	Microcomputer-Based
Physical Education	Forms Imaging Various	
Provost Central Campus	Fitness Package/Update	Microcomputer-Based
	Event and Equipment Management	
Provost Open Campus	Job Placement System	Microcomputer-Based
	Facility and Classroom Scheduling	Mainframe-Based
	Part-time Faculty Reports	Mainframe-Based
Public Safety	Facility Scheduling	Mainframe-Based
	Mailing Label System	
	Electronic Mail Between Regional Centers/Open Campus	
Public Safety	Gate Key System	Microcomputer-Based
	Photo ID File System	Microcomputer-Based
	Contact File System	Microcomputer-Based
	Incident File System	Microcomputer-Based
	Management (Time) Reporting System	Microcomputer-Based

Figure 40. New Application Needs for the Institution (Part 2 of 3)

Purchasing	Vehicle tracking System Bid Specification System Online Bidders List Inventory Control for Form Reorder	Microcomputer-Based
Regional Centers	Analyze Part-Time Instructors Applicant Tracking (Instructors) Mailing Label System E-Mail System	Microcomputer-Based
Research and Planning	Better SPSS Capabilities Redesign MIS System Graphics Capability for Report Generation Imaging Data Entry LAN Implementation	Mainframe-Based Mainframe-Based Mainframe-Based Microcomputer-Based
Social & Behavioral Sciences	Statistical Packages Graphic Packages for Student/Faculty Data	Microcomputer-Based Microcomputer-Based
Student Activities	Alumni Tracking Target Marketing Event Scheduling (Rooms) Equipment Transfer System Desktop Publishing for Advertising Ticket Sales System	Microcomputer-Based
Technology	Room Scheduling P/T Reporting Enhancements	Mainframe-Based Mainframe-Based
Testing	Regional Center Connectivity to Testing System	
VP-Planning & Info	Download capability Student Transfer System	Mainframe-Based

Figure 41. New Application Needs for the Institution (Part 3 of 3)

After reviewing the application needs of the departments there were several functions that are currently performed manually that could be done using a mainframe-based application that would save time, improve productivity, provide greater coordination, enhance the college's image, and be more cost effective.

The following new major systems should be developed and/or acquired over the next three years.

- Facility and Event Scheduling/Space Utilization
- Student Tracking System
- Inplant Management Information System for BPI
- Counseling Scheduling System
- Job Matching System
- Campus Information System

The following sections describes each application, defines who would be the users, what are the applications resource requirements, the cost, and a recommendation.

Facility and Event Scheduling/Space Utilization

Description: Facility and event scheduling and space utilization is an application needed by many areas on campus. This application should provide an efficient means to identify and track space usage for classroom and non-instructional scheduling. Room scheduling throughout the campus, equipment scheduling, Campus Services activities (room set ups, etc.), and room scheduling for outside events all need to be accommodated within this application.

Users: Central Campus Counseling, Provosts of Central and Open Campus, Student Activities, Learning Resource Center, Academic Alternatives, Instruction-Central Campus, Media Production, Community Events, Campus Services, Deans, and Research and Planning.

Category: This system will be a new distributed-based application. It will most likely be purchased as an application package with minimal modification to meet our needs and environment.

Cost: Approximately \$50,000.

Recommendation: We recommend the purchase of this package in FY93.

Student Tracking System

Description: Student tracking will provide longitudinal data on students that attend College of DuPage. The system will establish patterns of student enrollment and experience, help isolate and identify particular types of students, control for student background and establish connections between obtained assessment results and student experiences and provide a vehicle for effectively integrating information from diverse sources and locations.

Users: Research and Planning Office will be the primary users.

Category: Student tracking will be an in-house developed, mainframe-based application.

Cost: Approximately \$20,000.

Recommendation: We recommend the design and development of the student tracking system in FY93 with internal staffing and some external programming consultants.

Inplant Management Information System for BPI

Description: An inplant management information system needs to be developed for the Business and Professional Institute. An extreme need exists to integrate the existing student, billing, and financial systems.

Users: Business and Professional Institute will be the primary users.

Category: The inplant management information system will be a mainframe-based system. Due to the exact requirements of this system, it will most likely be developed in-house.

Cost: Internal staff time.

Recommendation: We recommend the design and development of an inplant management information system in FY94.

Counseling Scheduling System

Description: Currently Central Campus Counseling schedules approximately 350 appointments per week between students and counselors for academic advising and general student counseling. There are about 30 full and part-time counselors meeting this demand for appointments. There are

approximately 1,200 student contacts per week handled by the Counseling office for all purposes. Scheduling for appointments is done manually at the present time with a master appointment book updated serially by several office staff members.

The current scheduling process accounts for the entire counselors daily schedule for the quarter to maximize the recognition of available counselor time for student appointments. Automatically this process would provide a more effective means of scheduling appointments.

Users: This system would be used by the counseling office staff, counselors, and would directly benefit student clients requesting appointments.

Category: This is a new application that would be implemented in a local area network shared database environment. Multiple concurrent access for inquiry and update purposes would be required. It would most likely be an independent application not requiring input from or update to any other applications.

Cost: We estimate the cost of designing, programming, testing and implementing this system to be approximately \$35,000.

Recommendation: We recommend that this new application be reviewed and designed internally by Computing and Information Systems. Pending the results of the design study, we recommend the system be programmed in a microcomputer-based database/language by contract programmers. We believe this application should be implemented in FY93.

Job Matching System

Description: A job matching system is needed by Career Planning and Placement. It will help them place students in the appropriate employment opportunities with employers in our district.

Users: Career Planning and Placement Office will be the primary users.

Category: This system would be a new application that is mainframe-based.

Cost: Internal staff time.

Recommendation: We are planning on acquiring an existing job matching system from Illinois Central College. This will be implemented in FY94.

Campus Information System

Description: A campus information system will provide on-line access for students, staff and the district to campus information on campus events, activities, phone directory, courses and any other beneficial information. The system would consist of kiosk's located throughout the campus and perhaps at locations off-campus. The kiosk may serve as a one-stop shopping for information about the college.

Users: Students, staff, and residents of the district.

Category: New application.

Growth: Once the system is available we expect significant increase of 20 to 30 percent each year.

Recommendation: We recommend purchasing a Campus Information System over the next several years. We can start with a few stations in FY94 and FY95 and increase as the demand increases.

Distributed Applications

There are several administrative computing functions that are not provided through the major administrative software applications. Administrative computing support is also provided through end user software applications.

Distributed Computing capabilities were first established at the College of DuPage in fall 1985. This was implemented as part of an approach to enable the data processing function to begin to tackle the 'application backlog' problem. We had an administrative application backlog of about five years and an invisible backlog of unsatisfied user requests that represented at least two to three years of work.

The concept of distributed computing was seen as a significant opportunity for reducing this backlog. The result, from a users' viewpoint, was potentially a substantial increase in user satisfaction and productivity. It gave the user more control instead of relying just on Computing and Information Systems for support.

We first had to set up a support group within Computing and Information Systems to provide the consulting and technical support. Distributed Computing provides training, documentation, personal computing support and end user consulting for all end users at the institution.

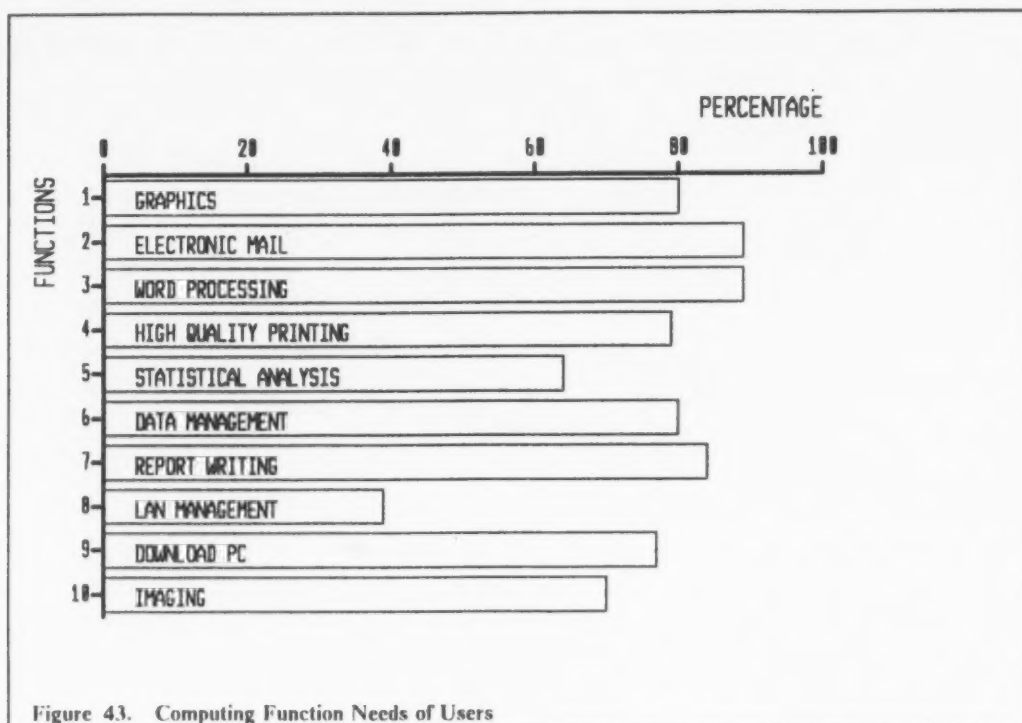
An area we are currently working on is the ad-hoc reporting and data download system to a PC called "FOCUS". Data extraction provides data from the IBM mainframe database to be supplied/transferred to the users or microcomputers. This will give the end users the capabilities of graphics, data management, reporting, and statistical analysis on production data.

The following figure shows a list of computer function needs that were identified by the user department survey.

DEPARTMENTAL COMPUTER FUNCTIONS NEEDED											
DEPARTMENTS	1	2	3	4	5	6	7	8	9	10	11
PRESIDENTS											
Office of President	X	X	X	X		X	X				
Auditor	X	X			X	X	X		X		
CENTRAL CAMPUS											
Office of Provost		X									
Instruction	X	X	X	X	X	X	X			X	
Business & Services	X		X	X	X	X	X		X		
Communications	X	X	X	X		X	X		X	X	
Humanities	X	X	X	X		X	X		X	X	
Natural Sciences			X	X	X	X			X	X	
Occupational & Vocational Education	X	X	X	X	X	X	X				
Social & Behavioral Sciences	X	X	X		X	X	X		X	X	
Learning Resource Center	X	X	X	X	X	X	X	X		X	X
Student Affairs			X			X	X		X		
Campus Counseling	X	X	X	X		X	X		X		X
Financial Aid			X			X	X		X		
Career Planning and Placement	X	X		X	X	X				X	X
Student Activities	X	X	X	X		X	X	X	X	X	
Health Services	X	X	X	X					X	X	
OPEN CAMPUS											
Office of Provost	X	X	X	X	X		X		X		X
Academic Alternatives	X	X	X	X	X	X	X		X	X	X
Instructional Design											
Instructional Alternatives	X	X	X	X	X	X	X		X	X	X
Testing	X	X	X		X	X	X		X	X	X
Business & Professional Institute	X	X	X	X	X	X		X	X	X	X
Instructional Affairs	X	X	X	X	X	X	X	X	X	X	X
Community Education	X	X	X	X		X	X	X	X	X	X
Westmont Regional Center - East	X	X	X	X	X	X	X		X	X	X
DAVEA Regional Center - North	X	X	X	X		X	X		X	X	X
Naperville Regional Center - Southwest	X	X	X	X	X	X	X		X	X	X
ADMINISTRATIVE AFFAIRS											
Office of Vice President	X	X	X	X	X	X	X		X	X	
Auxiliary Enterprises	X	X		X			X		X	X	
Campus Services		X	X		X			X		X	
Financial Affairs	X	X	X	X	X	X	X		X	X	
Human Resources	X	X	X	X	X	X	X		X	X	
Public Safety	X	X	X	X	X	X	X			X	
Purchasing	X	X	X	X		X	X		X	X	X
PLANNING & INFORMATION											
Office of Vice President		X	X	X	X	X	X		X		
Admissions, Registration & Records		X	X	X		X	X		X	X	
Computing and Information Systems	X	X	X	X	X	X	X	X	X	X	X
Grants	X	X	X	X	X	X	X	X		X	
Research & Planning		X	X						X	X	X
EXTERNAL AFFAIRS											
Office of Vice President	X	X	X	X	X			X	X	X	
Campus & Community Events	X	X	X	X	X		X		X		
Development	X	X	X	X	X	X	X	X	X		
Public Information/Media Production	X	X	X	X	X	X	X		X	X	X
*1-Graphics 2-Electronic Mail/Calendaring 3-Word Processing 4-High Quality Printer 5-Statistical Analysis 6-Data Management 7-Report Writing 8-Project Management 9-Download PC 10-Imaging 11-Local Area Network											

Figure 42. Computing Function Needs by User Department

The following is a graphics representation of percentage breakdown of each functional need. The bar graph shows significant needs in all areas with electronic mail, text management, and report writing requested by almost all departments.



Graphics

Departments requested that graphics be provided to allow for generation of histograms, pie charts, line and area graphs for use in reporting and presentations. The users want access to the information stored on the mainframe as well as data from microcomputer packages. Eighty percent of the departments need graphics capabilities.

Studies indicate an improved comprehension ability for the viewing of information presented graphically versus textually or numerically. Improved graphics packages allow the user to produce sophisticated graphics without advanced artistic or computing expertise. Harvard Graphics is a package growing in importance for providing excellent microcomputer graphics.

With the improvements in graphic software, both mainframe and microcomputer-based, it is important to provide consulting to user areas to select appropriate and economical solutions to users' graphics needs and wants. Closely related is the need to select proper hardware to input and output graphic materials such as digitizers and light pens (for input); and plotters, printers, and graphic color displays (for output). Computing and Information Systems has and will continue to research and suggest solutions to solve users' graphics needs. Use of Windows-based graphics and Macintosh graphics is creating a future need in graphic support.

Electronic Mail/Calendaring

Eighty-nine percent of the departments requested electronic mail/calendaring. Electronic mail provides end users the ability to send documents, memos, and letters electronically to staff, faculty, and administrators for review or final copy. Electronic mail will provide tremendous time savings for most administrators and supervisory personnel. Calendaring provides users the ability to schedule meetings and rooms electronically.

Electronic mail/calendaring may be the most important application for the administrative or managerial user. It can be used for brief message or large data files and reports. Some major considerations in selecting an appropriate electronic mail/calendaring system are:

- The system should be easy to use. It should allow relatively inexperienced computer users to fully use the system with a minimum of training and effort.
- The system used should provide a summary of your mail when you log on your microcomputer or terminal, allowing you to read, file, discard, or reply to messages.
- The system should have a flexible filing method, preferably allowing messages to be retrieved by subject, keyword, author, date, or other selection criteria.
- Calendaring must allow for scheduling of rooms, people, and equipment within five-minute increments.
- Most importantly, the system should have the flexibility and connectivity to allow all key individuals access to the system. This implies that the various types of hardware used (such as microcomputers, terminals, and minicomputer terminals) are able to transmit and receive information.

Text Management

Text management provides word processing and document storage, archival and retrieval. Most departments currently have word processing capabilities.

The support needs in this area involve training and developing text management procedures and standards as well as setting direction in the selection and purchase of new text management hardware and software. Eighty-nine percent of the departments requested assistance in this area.

- **Hardware Options** - Text management and word processing can be implemented in several ways. Dedicated word processing equipment such as the Harris-Lanier and Wang systems previously in operation at the college are no longer attractive alternatives due to their limited capacity and high cost. Stand-alone microcomputers are useful but result in limited communication among areas unless 3270 communication via coaxial or dial-up methods are added. Standalone microcomputers provide the most individual flexibility but require significant support and training to fully utilize their features. Minicomputer systems and Local Area Networks (LAN's) are alternatives, but present administrative and technical challenges that must be dealt with via support staff. Finally, mainframe-based text processing and file management are possible through the mainframe, although the software available may be more powerful and complex than most text management functions require.
- A large number of microcomputer-based word processing packages of varying complexity and flexibility are available. Computing and Information Systems has set standards for text management to reduce the number of software packages in use. Our current standard includes Officewriter 6.x and Wordperfect. Microsoft Word for Apple Macintosh equipment is also supported.

These packages provide full conversion capabilities allowing conversion of files from IBM microcomputers to the IBM mainframe file formats, and to some extent, conversion of IBM microcomputers to Macintosh conversion.

Computing and Information Systems has and will continue to support selected use of the VM-based text management system called Document Composition Facility (DCF) for unique projects that would benefit from its powerful file management and formatting capabilities. The *Learning Resource Center Video and Film Catalog* was originally created using this method.

High Quality Printing

Seventy-nine percent of the departments have a need for a high quality printer. The printing capability is needed for graphics and word processing. The use of laser technology is the trend for printing.

The relatively recent advent of laser technology has radically changed in-house printing. High out-of-house publishing costs may be cut in half in many organizations simply by linking text management systems (such as our current system SCRIPT) to high quality laser printers (such as the IBM 3812) for in-house production of everything from memos and forms, to catalogs and quarterlies. Rather than lowering standards for printed material by producing it in-house, the trend is to *raise* standards for *all* printed material which can now achieve a near typeset quality. Because printed material has such a tremendous impact on the image of the college, we feel that the importance of high quality printers cannot be overstated.

Desktop publishing technology is necessitating a new view of the entire process of institutional publishing. Traditionally, responsibility for the planning, design, artwork, layout, keying, and printing of printed media was assigned to one area; the client was assumed to have no expertise and was allowed no control over the process.

The Media Production area has recently implemented an AppleTalk network consisting of Macintosh microcomputers sharing an Apple LaserWriter high quality printer and an Allied Linotype typesetter. These systems are used in a production capacity for publishing and graphics projects for clients within the institution. Future plans include expanding the number of Macintosh systems in this area and using them on a higher speed local area network. New technology including microcomputer hardware and software, mainframe computer software, and near typeset quality laser technology printers have created the opportunity for the non-professional publisher to produce very high quality documents independently.

Currently there are 39 Hewlett-Packard LaserJet printers and eight Apple LaserWriter printers in use at the college. The increasing number of standalone or shared laser printers combined with the growth of local area networks is creating an environment in which most microcomputer users have, or will have, access to high quality printers. Add-on boards provide additional printer memory (print speed), font flexibility, and print quality. Color printing is rapidly becoming an option for some applications. New technologies including the production of color transparencies and slides are available and are being considered for use by many areas for presentation purposes. We believe consulting, support and training in the acquisition and use of these new features will become very important to the college in the near future.

Statistical Analysis

Sixty-four percent of the departments requested statistical analysis capabilities. Statistics allow for trend and time series analysis, averages, mean, mode, media, and summary cost analysis.

Statistical analysis is available on the IBM mainframe via two sources:

- Statistical Package for the Social Sciences (SPSS) is a sophisticated tool used by the Institutional Research and Planning area for developing institutional statistical reporting and trend analysis.
- Application System (AS) has a statistical module allowing simple to complex analysis of data available to AS. This module requires less specialized knowledge to use and is available to any user.

Data Management

Data management allows for collection and storage of information relating to the user area. With data management you can design your own input screens for data entry and report on the information stored. Eighty percent of the departments need this capability.

Two major options exist for providing data management functions:

- Application System (AS) has a sophisticated data management module allowing users to create, update, and produce reports from databases created by AS. This function is relatively easy to learn and has been used in several applications developed by and for administrative

users. Examples include an Aged Receivables system, Human Resources Benefits subsystem, and a Unit Cost Analysis subsystem.

- Microcomputer-based data management systems exist. Simple structures can be accommodated using products such as Lotus 1-2-3; more elaborate databases can be designed and implemented using products such as dBASE, Paradox, and Foxbase. Computing and Information Systems provides consulting services on the use of these products with training courses offered in Paradox and Lotus.

Report Writing

Report writing provides the user with reports generated from the database. This gives the user the ability to summarize, total and compute percentages for reporting. Eighty-four percent of the departments want this capability.

Focus, a fourth generation database, programming language and report generator, is a newly acquired product that allows access to the major mainframe applications such as Human Resources, CDAS Student System, and the CUFS Financial System. With proper training end users can generate ad-hoc reports from the mainframe files from these major systems.

Application System (AS) has a complete reporting module that enables users to design and produce their own reports conversationally at the terminal with a very few English-like commands. These reports can be displayed on the terminal screen and routed to a high quality printer.

Computing and Information Systems will continue to review and evaluate mainframe and microcomputer-based report generating tools. These tools will enable the user to have much greater control over the nature and timing of their information reporting needs.

Project Management

Project management was requested by twenty-three percent of the departments. Project management helps a user plan, monitor, and manage projects.

Graphics, Statistics, Data Management, Report Writing and Project Management functions are currently provided by Computing and Information Systems through Application System (AS) from IBM. A full explanation of the product is provided in the current environment section of this report. Application System was acquired to provide end users with graphics, statistical analysis, data management, report writing, and project management. This gave the end user the tools to "do it yourself" instead of relying on Computing and Information Systems for all the support. AS has been installed for four years and use of the system is growing. We have not had the support resources to provide the exposure to AS that is needed in the future.

Download PC

Many departments need the capability to download information stored on the mainframe to the PC. Currently data stored on the mainframe can be downloaded to a PC via file transfer routines and batch file commands. This data can be converted from the mainframe coding structure (EBCDIC) to the microcomputer coding structure (ASCII) and then loaded in packages such as Lotus 1-2-3. Seventy-seven percent of departments indicated a need in this area.

Imaging

Many departments have expressed interest in imaging technology. In fact, seventy percent of the areas surveyed would like to make use of this technology. Imaging is a general term for a family of microcomputer-based hardware/software tools that allow images and graphics to be scanned, digitized, and stored in a computer memory for future incorporation within other documents.

Future developments involve the scanning of textual source documents, minimizing or eliminating the need for some data entry. Imaging is a broad category of features and can be a labor-saving device as well as a way to provide enhanced computer output.

LAN Management

LAN Management is a general term referring to all types of support requested or needed by departments currently using local area networks. Thirty-nine percent of all survey respondents requested support for LAN's. Local area network support includes design, consulting, installation, troubleshooting, repair and all types of system administration. The thirty-nine percent figure should not be interpreted as a low interest in support need. In actuality, all areas that currently have a LAN are requesting support. The type of support needed for this area tends to be very labor intensive and technical in nature.

Currently there are 15 local area networks in operation at the college. These include networked classroom/lab in the Seaton Computing Center, Westmont and Naperville Regional Centers, and Open Campus Microcomputer Lab Staff Server and Academic Alternatives Learning Lab. The Testing Lab, Career Planning & Placement and the Arts Center are other major networks in current operation.

Each of these networks requires ongoing management support in the areas of installation and upgrades of new hardware, operating system software, and application and utility software. Additional responsibilities include security management, data recovery, network troubleshooting and repair, and capacity planning. Support for this function requires considerable technical knowledge in the areas of cabling topologies, network protocols, operating systems (both network and workstation), network monitoring and diagnostics, and microcomputer workstation operating concepts. This support area will continue to grow in importance at the college.

Recommendations

The recommendations are based on the current individual system recommendations and any new system initiatives.

The following recommendations will support the current administrative software applications and the new applications that are needed for the future.

- **Provide student tracking system in FY93.**

We are recommending the purchase and/or development of a student tracking system which allows longitudinal data to be collected on students. The estimated budget is \$20,000 in FY93.

- **Provide a space utilization/classroom scheduling system in FY93.**

As space on campus becomes limited, efficient management of classroom space becomes more important. We are recommending the purchase of a classroom scheduling/space utilization system to improve the management of space. This system is estimated at \$50,000 in FY93.

- **Provide counseling scheduling system in FY93.**

We are recommending developing a counseling scheduling system to provide students a faster method of scheduling appointments with college counselors. The system will be developed in-house by staff and by consulting funds available in the Computing and Information Systems operating budget. The estimated cost is \$30,000.

- **Replace scanning system in FY93.**

The current scanner system is 12 years old and is very expensive to maintain. We feel a newer model scanner based on a PC will meet our needs. The budget for the scanner is \$30,000. We feel a new scanner has a payback period of 3 years. We are recommending to process under the college's risk fund.

- **Expand the library system in FY93, FY94 and FY95.**

We are recommending the library system be expanded to provide printing, additional terminals and ports each year. In FY93 and FY94 we are recommending three terminals each year.

Because of the LRC addition, five additional terminals and a CPU upgrade will be needed to meet student demand. The estimated budget is \$13,000 in FY93, \$9,000 in FY94, and \$80,000 in FY95.

- **Update existing mainframe applications in FY93, FY94 and FY95.**

We recommend the following mainframe applications be updated with the most current release; Financial System in FY93 and FY95, Degree Audit in FY94, and Human Resource System in FY95.

- **Purchase computer equipment for new employees in FY93, FY94 and FY95.**

Each year new employees are hired at the college to provide additional support for the user department. Many of the new employees require a computer to perform their job. In the past funds were not set aside for this purpose resulting in less productivity for employees needing a computer immediately on employment. We are recommending purchasing computer equipment for new employees needing a system. We budgeted \$10,000 for four systems in each year to fund this request.

- **Provide inplant management information system for Business and Professional Institute in FY94.**

We are recommending the internal development of an Inplant Management Information System for Business and Professional Institute that will integrate with the existing student billing and financial systems.

- **Provide a job matching system in FY94**

We are recommending a job matching system be acquired to provide Career Planning and Placement a system to assist students in matching qualifications with job availability. A donation of a system has been identified.

- **Expand automated voice response system in FY94.**

We are recommending expanding the current 16 line voice response system from 16 to 32 ports. This will provide additional functions while providing additional accesses for student touch tone registration. The estimated budget is \$30,000.

- **Provide a campus information system in FY94 and FY95.**

We are recommending the purchase of a campus information system in FY94 to provide information access to students, faculty and staff. The system will provide generalized access to campus events and activities, phone directory for faculty and staff, employee benefit information, athletic scheduling, course descriptions, and/or other beneficial information. The access devices may be touch screen and/or keyboard entry. Kiosks should be located at various locations on campus. We are recommending \$20,000 in FY94 and FY95. Implementation is limited until the campus-wide cabling system is completed.

- **Provide an imaging system for Human Resource office in FY95.**

We are recommending the purchase of a LAN-based imaging system in FY95. The imaging system will provide an efficient method of storing personnel file information for the Human Resource office. Since imaging is becoming a cost-effective system for document storage and access, the Human Resource office will serve as a pilot project for imaging at the institution. The estimated budget is \$90,000. Campus-wide implementation is limited until the campus-wide cabling system is completed.

- **Provide LAN-based office system in FY95.**

We recommend the development/acquisition of a standardized office system that can be used campus-wide. The system should provide electronic mail, calendaring, scheduling, bulletin boards, and databases. The estimated budget is \$30,000. This project is dependent on a campus-wide cabling system.

- **Provide access to information for faculty and staff.**

Continue to acquire products and services to provide faculty and staff easy access to necessary information to perform their job functions. This includes access to the databases on the mainframe and local area networks and to allow downloading of information to users' personal computers. This recommendation cannot be completed until the campus-wide cabling system is complete.

- **Decentralization of Administrative applications.**

We are recommending moving in a direction to decentralize administrative applications from the mainframe to LAN-based systems where appropriate. This approach will reduce costs and allow easier campus-wide access to information while supporting the applications of the future.

- **Encourage use of reporting tools.**

Encourage use of end user reporting tools through services and training sessions to reduce staff support.

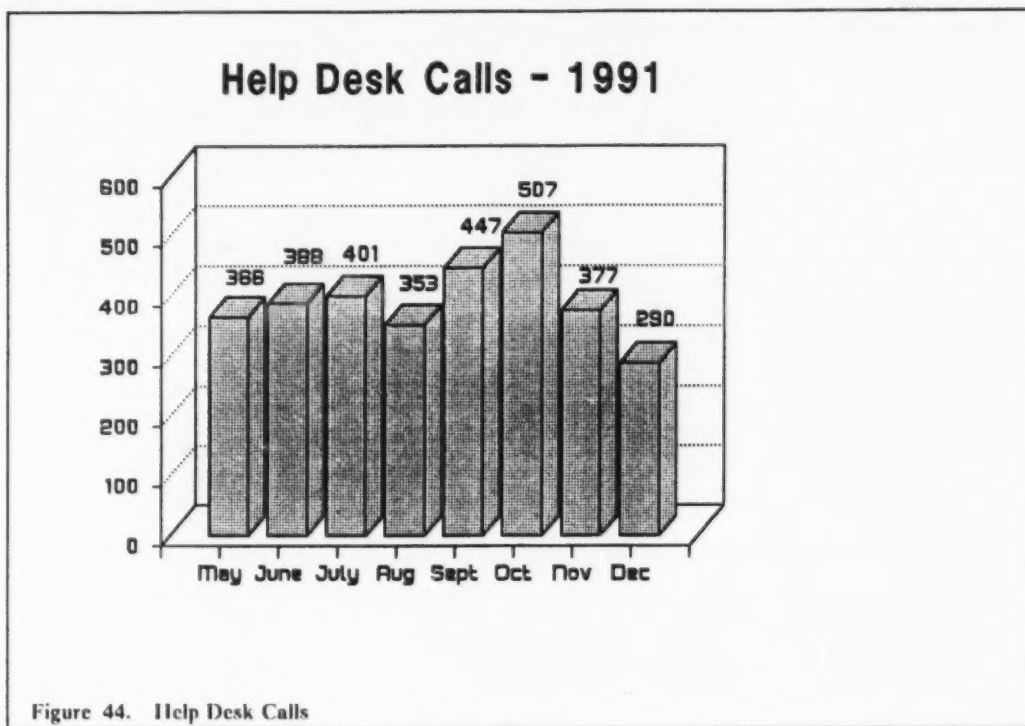
Support

Computing support is provided by several areas of the college as defined in the current environment section. In the departmental survey we requested users to identify areas of support that needed improvement. These were for basic areas of support that were needed: training, programming, documentation, consulting and hardware repair.

Help Desk

In May, 1991 Computing and Information Systems established a Help Desk to coordinate and expedite end users inquiries and problems concerning computer use at the college. The Help Desk provides a common number for all end users to call to get answers to questions concerning microcomputers, mainframe communication, training, and all other general questions concerning computing. The function is manned by Distributed Computing between the hours of 8:00 a.m. and 5:00 p.m. with an answering machine operating at other times.

Calls are logged and tracked on a Help Desk system. Since the May 1991 inception of this function, the number of calls has steadily increased. October 1991 calls totaled 507 for the one month. The following figure shows the growth in the number of calls. The average duration of referenced calls is approximately one hour to complete. Requests that cannot be completed immediately are pended and tracked on reports within Computing and Information Systems.

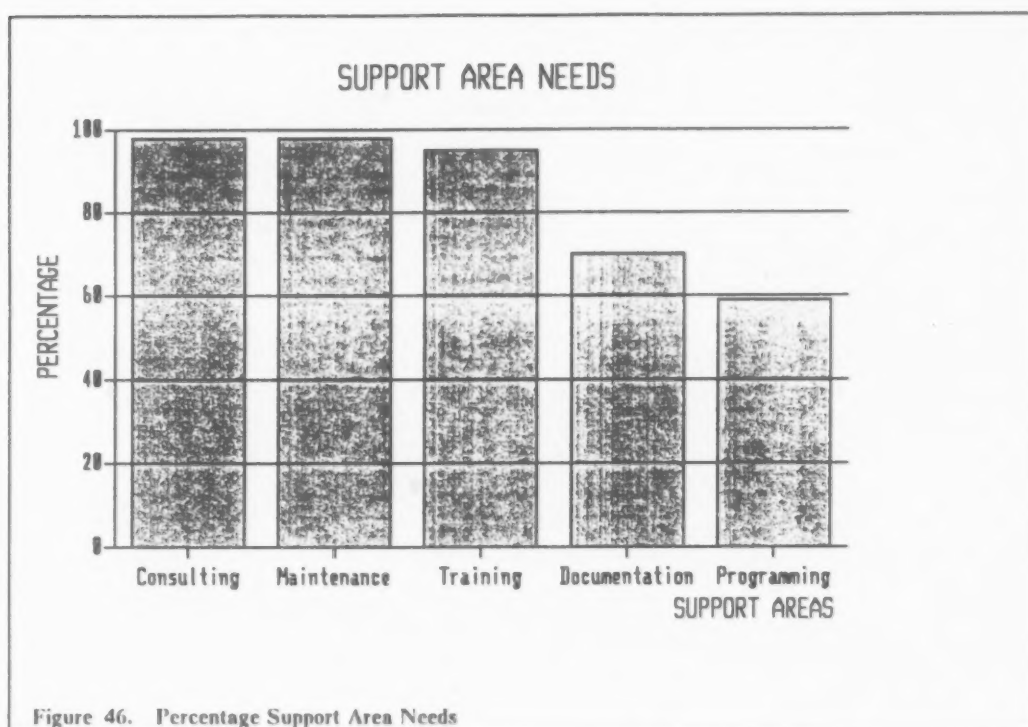


From the administrative computing departmental survey, we gathered information on the support needs. The support needs were divided into the following categories: training, programming, documentation, consulting and computer maintenance. The following figure shows the individual departmental support needs.

DEPARTMENTAL SUPPORT AREA					
DEPARTMENTS	1	2	3	4	5
PRESIDENTS					
Office of President	X		X	X	X
Auditor	X			X	X
CENTRAL CAMPUS					
Office of Provost	X			X	X
Instruction	X		X	X	X
Business & Services	X			X	X
Communications		X		X	X
Humanities	X			X	X
Natural Sciences	X		X	X	X
Occupational & Vocational Education	X		X	X	X
Social & Behavioral Sciences	X	X		X	X
Learning Resource Center	X		X	X	X
Student Affairs	X			X	X
Campus Counseling	X	X	X	X	X
Financial Aid	X	X	X	X	X
Career Planning and Placement	X	X	X	X	X
Student Activities	X			X	X
Health Services	X			X	X
OPEN CAMPUS					
Office of Provost	X	X	X	X	X
Academic Alternatives	X	X	X	X	X
Instructional Design	X		X	X	X
Instructional Alternatives	X	X	X	X	X
Testing	X	X	X	X	X
Business & Professional Institute	X	X	X	X	X
Instructional Affairs	X	X	X	X	X
Community Education	X	X	X	X	
Westmont Regional Center	X		X	X	X
DAVEA Regional Center	X		X		X
Naperville Regional Center	X			X	X
ADMINISTRATIVE AFFAIRS					
Office of Vice President	X	X	X	X	X
Auxiliary Enterprises	X	X	X	X	X
Campus Services	X			X	X
Financial Affairs	X	X	X	X	X
Human Resources	X	X	X	X	X
Public Safety	X	X		X	X
Purchasing	X	X	X	X	X
PLANNING & INFORMATION					
Office of Vice President	X			X	X
Admissions, Registration & Records	X	X	X	X	X
Computing and Information Systems	X	X	X	X	X
Grants	X	X	X	X	X
Research & Planning		X	X		X
EXTERNAL AFFAIRS					
Office of Vice President	X	X	X	X	X
Campus & Community Events	X	X	X	X	X
Development	X	X		X	X
Public Information/Media Production	X	X	X	X	X
*1-Training 2-Programming 3-Documentation 4-Consulting 5-Maintenance					

Figure 45. Departmental Support Area

The figures below show a percentage breakdown for each support area. Training, consulting and equipment repair was requested the most by the departments.



Training

Training was requested by 95 percent of the departments. Training is provided by support staff to show users how to use computer equipment, how to use computer software, and how to access a computer system. Training can be provided through individual instruction, groups, classes, or video-based education. Individualized training provides the fastest learning curve. Training support is provided by Distributed Computing. Staffing support consists of one full-time plus about six other staff members contributing about ten percent time to training.

The major areas requiring training are listed below:

- **Mainframe Computer System**

The IBM 9121 mainframe computer system provides a wealth of information for administrative computer users. Major administrative systems, such as the CDAS system (consisting of Financial Aid, Student Records, Billing and Receivables, the General Ledger system, the Human Resources, Financial System, and Capital Assets systems as well as others) allow the many current and potential computer users to review, change, update, and analyze data. Users need initial training in how to use a terminal or terminal-emulating device such as a PC; how to access and manipulate data in the various systems; and more generally, what data is available on the computer and how it can be used.

Other areas requiring training are mainframe-based word processing (SCRIPT), use and access of the CMS-based tools such as electronic mail, and the College of DuPage Menu system.

Application system (AS) is an end user tool designed for use by both relatively non-technical and technical personnel. As increasingly sophisticated applications for this tool and other decision support tools such as Information Builders FOCUS are used, significantly more training will be needed.

- **Microcomputer Systems**

The major use of microcomputers to date at the institution has been in the area of word processing. Some administrative areas have selected word processing software because of staff working knowledge of the software, rather than the more relevant factor of processing capability. Computing and Information Systems is providing training in the use of word processing software so that departments do not become locked into selection of outdated word processing products.

Many microcomputer software packages are available in the areas of database management, spreadsheets, communications, graphics, utilities, and other categories. Users need advice, training, and suggestions in the use of these products. Traditionally many properly selected software packages have gathered dust for lack of training by computer departments.

Microcomputer operating systems, communication packages, and the basic hardware itself are becoming increasingly complex. It is advisable that current and potential microcomputer users be given the opportunity to receive basic instruction about the full capabilities of their equipment.

A major enhancement of the training function provided by Computing and Information Systems was facilitated by the establishment of a permanent training center equipped with microcomputers and terminals. A detailed description of the training center is located in the Current Environment section of this document. Many of the training topics outlined above will be addressed through formal and *ad-hoc* training projects performed by several departments including user areas.

The training center is used as a resource by Distributed Computing and Mainframe Computing departments to provide campus computer users with training on a wide range of subjects. When the training facility is not used for training workshops, the area is a general access area for all staff to use other equipment in the room, i.e., plotters and printers. Also, demonstration equipment may be located in this area. A general list follows of the type of training functions to be performed in this facility.

- **Distributed Computing**

Faculty training in the area of multimedia will be given products such as Podium and other multimedia products integrating voice, video, and data for instructional and presentational purposes.

Faculty orientation in the use of IBM personal computer PS/2 Systems is conducted.

Faculty training in the use of application packages including Lotus 1-2-3 and First Choice, an integrated package, is provided. Special topics will periodically be included in seminars and demonstrations in the training center.

Training sessions in OfficeWriter and WordPerfect word processing products, are held.

End user training in the use of Application System (AS) is given for specific applications.

End user staff development in the use of networking and other newer technologies, including the use of plotters and CD ROM and multimedia units will be available in the training center.

Classes in PC DOS, Windows, Harvard Graphics, Lotus 1-2-3, Allways, laser printing and Paradox are currently conducted for faculty and administration with new course development continuing based on user needs.

Additional short seminars in microcomputer maintenance and troubleshooting fundamentals will be given to interested users.

User group meetings will be held regularly to stimulate the interchange of experience and ideas among administrative and academic user groups.

- **Mainframe Computing**

Initial and ongoing training is conducted on the use of mainframe applications such as CUFS, Human Resources and Student Records System updates.

Training in the use of Focus, a productivity and report generating tool, will be provided to end users for the Human Resources System, Student System and CUFS.

Decision support tools for report generation will be taught.

Staff training in a variety of computer and video-based training programs will be available.

If the appropriate level of training is provided, employee productivity will increase. We must expand the training center and commit additional resources to provide adequate levels of training. This will require additional staff to start programs in multimedia and other new training applications as well as maintaining the current level of support.

Consulting

Consulting was requested by 98 percent of the 44 areas surveyed. Consulting provides users with someone to contact in the case of a computer problem or question about a product or service. Most of the computer problems consist of not knowing how to use a system, i.e., lack of training, documentation, or errors in the application programs that currently exist.

Also, as part of consulting, we provide review on computer equipment requests. Computing and Information Systems is responsible for reviewing all computer equipment and software requests from all the departments. We provide an in-depth review of each request making sure the equipment and software will meet the users' needs. Users want to be kept informed about what is happening in the future in their area. What type of computer system should we purchase to support our area in the future? What should I buy? We work with the user from acquisition, installation, training, and consulting.

An important area of consulting performed by Computing and Information Systems involves not only reviewing user needs, but also providing direction in standardizing general purpose software. Of the thousands of software items available in the marketplace, relatively few can be selected to meet most users' needs. By providing direction in the form of recommending standards for various purposes, we are better able to support, train, and assist users.

A more general type of consulting is currently needed to a greater degree than it can be provided. This is in the area of basic systems analysis in the use of microcomputer hardware and software to solve informational problems. Assuming that the proper hardware and software application programs have been selected, the user often needs professional help with implementing a workable solution using the available tools, we believe an increased emphasis in this area will pay dividends in increased productivity and fuller utilization of the available microcomputing equipment.

Programming

Programming was requested by 59 percent of the departments. Programming provides users assistance in changing current application programs, setting up new programs, adding options to old programs, modifying reports, and collecting other information for reporting and analysis. Programming assistance is very specialized and time consuming. Programming support is provided by the Mainframe Computing and Distributed Computing departments within Computing and Information Systems. Mainframe Computing provides programming support for the major administrative applications. Distributed Computing provides programming support for end user applications. This consists of microcomputer applications. Distributed Computing has only one full-time staff member to provide programming support.

Currently all the administrative software application programming support is provided through Mainframe Computing. There are ten full-time employees. The following figure shows the minimum administrative programming support requirements for the current administrative applications on the IBM mainframe. These FTE's also include time spent on problem reports.

MAINFRAME COMPUTING SUPPORT REQUIREMENTS			
<u>Major Mainframe Applications</u>	<u>FTE REQUIRED ANNUALLY</u>		
	<u>FY93</u>	<u>FY94</u>	<u>FY95</u>
Current Systems			
Billing & Receivables (BRS)	.4	.4	.4
Business System (CUFS)	.5	.5	.5
Capital Assets (CAS)	.1	.1	.1
Decision Support/Reporting System	.5	.5	.5
Degree Audit	.1	.1	.1
Financial Aid (FAS)	.4	.4	.4
Human Resources (HRS)	1.0	1.0	1.0
Management Information (MIS)	.4	.4	.4
Student Records (SRS)	.5	.5	.5
Supervision	1.0	1.0	1.0
Telephone Registration	.1	.0	.1
New/Upgrade Systems			
*Inplant Management Information System	.0	3.0	.0
*Upgrade Release (CUFS)	1.5	.0	1.5
*Campus Information System	.0	.0	1.0
*Upgrade Release (Degree Audit)	.0	1.5	.0
*Facility Scheduling/Space Utilization	2.0	.0	.0
*Upgrade Release (Human Resources)	.0	.0	3.5
*Job Matching System	.0	1.0	.0
*Student Tracking System	2.5	.0	.0
*Add Lines to System (Telephone Reg.)	.0	.1	.0
Total FTE	11.0	11.0	11.0
*New applications or upgrades			

Figure 47. Minimum Mainframe Computing Support Requirements

In FY93, we allocated 1.5 FTE's to the Business System to upgrade to release 6.0. Two FTE's will be allocated to implement the Facility Scheduling/Space Utilization package. The Management Information System will be allocated an additional 2.5 FTE's to design and develop the student tracking system. The remaining FTE's will be used to maintain the existing systems.

In FY94, three FTE's will be allocated to develop and implement the inplant management information system. The Degree Audit System will be allocated 1.5 FTE's to perform the upgrade to release 4.4. One FTE will be allocated to implement the Job Matching System. Enhancing the Telephone Registration System with additional lines will require five FTE's. The remaining FTE's will be used to maintain the existing systems.

In FY95, 1.5 FTE's will be allocated to the Business System to upgrade to the current release at that time. One FTE will be allocated to implement the Campus Information System. 3.5 FTE's will be allocated to the Human Resource System to upgrade to the current release at that time. The remaining FTE's will be used to maintain the existing systems.

Documentation

Documentation support was requested by 70 percent of the departments. Computer documentation is important for several reasons:

- To guarantee that vital information about a system is never lost when an employee leaves.
- To provide the mechanism for individual learning and self-study as a supplement or possible alternative to initial training and later consulting.

Well-written documentation geared to end users can supplement or substitute for first-time user training. Reference documentation that describes advanced or lesser-used features can supplement face-to-face or telephone consulting. When departments have employee turnover then the

documentation can serve as the training method of the system. This may save staff time not only for our department, but for the end-user department concerned.

Most existing documentation is poor or nonexistent for the end users. Distributed Computing is responsible for upgrading user documentation. This area has started to improve the documentation available. Although users have expressed satisfaction with those documentation projects already completed, significant staff time is needed to provide the users with an adequate level of user documentation support.

We have one full-time Lead Technical Writer/Editor who is responsible for providing end user documentation in the form of user manuals for all administrative information systems, communications products, and microcomputing tools in administrative use. The amount of effort needed to update and expand existing documentation, provide user manuals for newly developed applications, and expand and develop new areas of user documentation in the areas of word processing, microcomputing, and communication technology is considerable.

Maintenance

Currently a Computer Equipment Maintenance program is included as a function under the newly established Help Desk within Computing and Information Systems. This program includes support for all IBM microcomputers, Apple/Macintosh microcomputers, other equipment such as AT&T, Zenith, other IBM compatibles, and IBM terminals and printers attached to the mainframe. In the departmental survey, ninety-eight percent of the user departments requested fast, responsive equipment repair.

Distributed Computing staff provides equipment troubleshooting, repair, replacement, installation, and movement of all microcomputers, terminals, and printers. Coordination of warranty repairs and the minority of end user computer equipment under maintenance contract is also performed by this department.

An automated tracking system is used to document, track, and follow-up on reported calls. As the following figure shows, the growth of service calls, averaging slightly less than one hour each, has increased from approximately 40 per month in 1998 to about 180 calls per month in 1991.

As the number of end user terminals, microcomputers, and printers continue to increase in the future, the need for increased staffing to provide adequate support will continue to grow. Currently, one part-time and two full-time classified microcomputer technicians provide this support. We are recommending an additional full time microcomputer technician in FY94.

Recommendations

The College of DuPage has approximately 1,570 microcomputers and mainframe terminals available for faculty, administrative and classified staff, and student use. Adequate support of this equipment including training, programming, consulting, documentation, and equipment maintenance is essential for this equipment to be used in a productive and effective manner.

Computer literacy is the first requirement in any support process. People need documentation to be made aware of what computers can do; documentation is required to incorporate computers into the work environment. Without adequate training, all our sophisticated systems are unlikely to function with maximum efficiency. Computer maintenance activities must be responsive and cost effective to avoid delays and frequent interruption in the use of this equipment. Adequate programming support is needed to provide software to meet specialized and custom informational needs of end users.

After reviewing the survey material and the interviews with the departments, user support is critical to the success of computing on campus. We need sufficient staffing to provide the support needed as more computer equipment and software is used in the departments of the college. We need to look at every mechanism possible to provide the level of support needed.

The following recommendations will provide the computer support necessary on campus:

- **Provide a Programmer Analyst in FY93.**

A new Programmer Analyst position is needed to provide additional help to meet the increased programming needs of the user departments. This position is requested by FY93.

- **Provide LAN Coordinator position in FY93**

We are recommending a LAN Coordinator position to provide support for all the local area networks on campus. As we continue to add networks the need for additional support will be required.

- **Provide additional microcomputer maintenance position for user departments in FY94.**

Each year user departments continue to purchase microcomputers. In the last three years we have provided onsite service inhouse to the user departments. In order to continue to provide an adequate level of service we are recommending a full-time microcomputer technician be added in FY94.

- **Provide additional PC training and consulting support in FY95.**

We are recommending an additional Information Center Analyst in FY95 to meet the continuing need for user department support for microcomputers.

- **Develop program/user workshops on computing.**

Develop program/user workshops on computing as to what is happening today, how computing can be used effectively in a given department. Many current and potential computer users are not aware of what is available. Regular seminars will help eliminate this information gap and allow users to ask the right questions.

- **Incorporate computers into simple activities.**

Incorporate computers into simple activities. Activities that should be promoted include wide use of electronic mail for simple messages, calendaring facilities, and administrative schedules.

- **Use the computers that currently exist on campus to improve productivity.**

Effectively utilize computers into daily activities. Such activities should include downloading data from the mainframe system into microcomputers for analysis and reporting, effective and wider use of word processing, and incorporating graphics for reporting and presentation.

Hardware

Microcomputers, terminals and printers are needed for the end user to access information that is stored and printed from the mainframe. The following figure shows the future hardware needs as requested by the user departments. These items are budgeted directly from the department's capital budget.

FY93-95 DEPARTMENTAL HARDWARE					
DEPARTMENTS	DEVICE TYPES*				
	A	B	C	D	E
PRESIDENTS					
Office of President	2			2	
Auditor	1			1	
CENTRAL CAMPUS					
Office of Provost					
Instruction	1				
Business & Services					
Communications	1		1	1	
Humanities	2			1	
Natural Sciences				1	
Occupational & Vocational Education					
Social & Behavioral Sciences					
Learning Resource Center					
Student Affairs					
Campus Counseling	5			2	
Financial Aid	2			1	
Career Planning and Placement	3			2	
Student Activities	7			1	
Health Services	1			1	
OPEN CAMPUS					
Office of Provost					
Academic Alternatives	2			1	7
Instructional Design	7	1		2	
Instructional Alternatives	12			11	
Testing	2			1	
Business & Professional Institute				1	
Instructional Affairs	2		2	2	
Community Education					
Westmont Regional Center			1		
DAVEA Regional Center	1			2	
Naperville Regional Center	2		1	3	
ADMINISTRATIVE AFFAIRS					
Office of Vice President					
Auxiliary Enterprises	1			1	
Campus Services	3			2	
Financial Affairs	1	1			
Human Resources	6			1	
Public Safety	1				
Purchasing	1			1	
PLANNING & INFORMATION					
Office of Vice President					
Admissions, Registration & Records	3		3	1	
Computing and Information Systems	9	1	8	2	7
Grants	3				
Research & Planning	2				
EXTERNAL AFFAIRS					
Office of Vice President	1				
Campus & Community Events	2			2	
Development	1			1	
Public Information/Media Production					
TOTALS	87	3	16	47	14
*A-IBM PS/2 Micros C-IBM Mainframe Terminals E-Other Computer Equipment B-Apple Macintosh Micros D-High Quality Printer					

Figure 48. FY93-95 Department Hardware

Recommendations

The administrative computing hardware needs consist of devices for stand-alone computing and terminal access to the mainframe. We are recommending that equipment requested above be acquired through the operating budgets that are now established in each department. These items are not included in the following financial cost tables.

Action Plans and Financial Considerations

This section identifies each recommendation from the administrative computing section and defines the estimated costs and time frame for acquisition and implementation. The following table shows each major computing area with the items that need to be acquired over the next five years. The tables define the capital cost and the operating budget cost. The operating budget cost is usually the maintenance amount needed to support the hardware/software. Also included is an estimated time frame. The time frame serves as a priority for what needs to be completed first. This identifies when the item should be acquired, installation date and estimated production date.

ADMINISTRATIVE COMPUTING					
<u>Item</u>	<u>Budget Estimate</u> <u>Capital</u>	<u>Operating</u>	<u>Acquire</u>	<u>Time Frame</u> <u>Installation</u>	<u>Production</u>
Administrative Systems					
Library System					
(3)Terminals/Ports	\$9,000	\$900	Aug 92	Oct 92	Nov 92
Printing	4,000	400	Aug 92	Oct 92	Nov 92
(3)Terminals/Ports	9,000	900	Aug 93	Oct 93	Nov 93
(5)Terminals/Ports	15,000	1,500	Aug 94	Oct 94	Nov 94
CPU Expansion	50,000	5,000	Aug 94	Oct 94	Nov 94
Touch-Tone Expansion	\$30,000	\$900	Aug 93	Oct 93	Jul 93
Imaging System-Human Resources	90,000	9,000	Aug 93	Feb 95	Jul 94
Facility Scheduling System	50,000	5,000	Aug 92	Jan 93	Apr 93
Student Tracking System	20,000		Jul 92	Jan 93	Jul 93
Campus Information System	20,000	600	Jan 94	Jul 94	Dec 94
Campus Information System	20,000	600	Jan 95	Apr 95	Jul 95
LAN Based Office System	30,000	1,000	Jul 94	Jan 95	Jul 95
New Employee Setup	10,000	300	Aug 92	Oct 92	Nov 92
New Employee Setup	10,000	300	Aug 93	Oct 93	Nov 93
New Employee Setup	10,000	300	Aug 94	Oct 94	Nov 94
Total-Systems	\$377,000	\$26,700			
Support					
Mainframe Computing Programmer/Analyst		25,000	Jul 92		
Distributed Computing					
LAN Coordinator		25,000	Jul 92		
Senior Academic Analyst		30,000	Jul 92		
Lab Supervisor - Pt		10,000	Jul 92		
Microcomputer Technician II		20,000	Jul 93		
Information Center Analyst		25,000	Jul 94		
Total-Support		\$110,000			
Total-Administrative	\$377,000	\$136,700			

Figure 49. Administrative Computing Estimated Budget

The total amount needed for administrative computing is \$377,000 of capital funds and an increase of \$136,700 in the operating budget. See the final section of the plan for a breakdown by fiscal year. Because of the length of time required to implement the administrative software applications, some of the time frames extend beyond the three year time frame of the plan. It is important to identify a time frame for all needed applications.

CENTRAL COMPUTING & COMMUNICATIONS

Overview

The Central Computing and Communications section will provide a definition of central computing and communications, define the critical issues and goals and provide the recommendations and costs to meet the college requirement for FY93-95.

Definition

Central computing consists of all the support and resources for mainframe system hardware, software, campus-wide networking and personnel that support academic and administrative computing.

Issues

A number of issues relating to Central Computing need to be addressed in order to provide the most cost effective solution to computing. The institution must be prepared to:

- Use technology to get the most out of system resources.
- Provide system hardware and system software solutions that will support user applications into the future.
- Analyze current procedures and recommend more efficient methodologies for using current resources.
- Maximize system access to all students, faculty, and staff.
- Make sure resources are readily available to users.
- Provide easy to use systems through software applications, documentation, and training.
- Provide easier to use support procedures to allow fast responses to user problems.
- Respond to user priorities - define what is important to them as a group.
- Provide professional guidance to all users when recommending the use of technology.
- Provide quality service to all students, faculty, and staff.

Goals

The following are the Central Computing goals:

- To provide a stable on-line computer environment.
- To maintain data integrity of all system and user data bases.

- To provide an up-to-date operating environment.
- To provide quality production services to all users equally.

Software

Systems software are the program/applications that support the operation of the central computing facility. This includes operating system software, security, performance monitoring, system accounting and charge back, and computer center management software. Refer to the current environment section for details of our current configuration.

Operating System Software

Our current operating system consists of three separate environments: VM/SP, VSE/SP, and MUSIC. Each of these was discussed in the current environment section of this report. VM/SP provides the control operating system for all functions performed on the IBM mainframe. VSE/SP is used for three separate workloads: administrative use, administrative testing, and student curriculum use. The administrative VSE/SP provides for the bulk of our administrative application needs including batch, online CICS functions. The administrative testing VSE/SP is used for new program development and problem resolution of batch, online CICS functions. The student VSE/SP is totally separate from the administrative system to assure proper security and user availability. MUSIC provides a highly controlled and manageable online environment for students as well as an administrative environment for electronic mail and scheduling. We are in the process of installing VM/ESA and VSE/ESA to replace VM/SP and VSE/SP. These new operating systems in concert with the IBM 9121 processor will assure our ability to maintain our current response time and throughput performance levels as well as

After reaching the base platform of VM/ESA, VSE/ESA and MUSIC, VM/ESA should be upgraded as the announced newer versions become available. The enhancements available in the VM/ESA Release 1.1 would improve performance in selected areas, and provide a more streamlined operating system service mechanism.

Recommendations

The following recommendations provide a direction for mainframe operating system software:

- Upgrade the VM/ESA, VSE/ESA and MUSIC operating systems.

The operating system environment of VM/ESA, VSE/ESA and MUSIC should be upgraded to meet the future system requirements. This will require VM/ESA release 1.0 to be upgraded to VM/ESA release 1.1. The VSE/ESA and MUSIC systems should be upgraded to the most current versions as they are announced. Each of these upgrades will require additional resources. Please refer to hardware needs for additional costs relating to disk space.

Operations

The operational needs of Computing and Information Systems include those items relating to the space requirements for staffing support, computer room space for the placement of the additional computer equipment, storage of computer equipment and filing, and the staffing for computer operations for the central facility.

Operational Hours

The computer operations area needs to expand its hours of coverage during the constant peak periods of production. This would provide more consistent coverage during the unavailability of the scheduled computer operator. We feel that by expanding one part-time position to full-time, or adding one part-time operator will provide us the flexibility to stabilize our operation and effectively meet the needs of our users.

Staffing Support Space

Computing and Information Systems needs additional office work space for staffing support, and additional storage for computer equipment, files, and supplies.

The current work space available for staffing is limited. The current average square footage per staff support employee is 62 square feet. Many positions require individual offices to work with users problems and consulting. Currently most offices have two or more people on top of each other. We do not have any additional work space for staffing support.

Computing and Information Systems is providing the maintenance support for personal computers on campus. The storage and work space requirements have grown over the last year and will continue to grow. We are currently using SRC2017 as a temporary location for the repair function. For now the space appears to be acceptable.

Office space is needed for additional staffing and programmer consultants. There is no additional office space available for staffing. Additional space will be needed to support the functions now performed and any additional staffing.

Recommendations

The following is a list of recommendations for the computer operations including staffing space, computer room space, and operations.

- **Expand hours of computer operations in FY93.**

In FY93, expand the part-time computer operator position to full-time operator or add one part-time operator to allow for the flexibility of peak periods of production and computer operator coverage at a cost of \$10,000 per year.

- **Provide additional space for Computing and Information Systems in FY93 and FY95.**

Additional office space will be needed for the Computing and Information Systems staff recommendations in FY93-FY95.

Hardware

Mainframe computer equipment needs are based on the growth of existing applications and new applications that are to be purchased or developed. This growth results by adding terminals and printers to the system and expanding capabilities of existing applications and administrative systems. In situations where the growth exceeds the capacity, the equipment must be expanded. If the equipment cannot perform certain necessary functions, even with upgrading, then the equipment must be replaced. Mainframe computer equipment on the IBM system can be defined by six major components: *disk capacity, number of ports, CPU memory, CPU power in MIPS, tape drives, and printing.* In the following sections we will identify the hardware component needs for the next three years.

Disk Capacity

Disk capacity defines where the information and computer programs are stored on the mainframe computer system. Currently we have a total capacity of 40,868 gigabytes or 40,868 megabytes or 40,868,000,000 characters of storage. The disk space is defined by the current application usage including administrative, academic, and systems; the estimated growth from FY93 to FY95; and the new applications that are planned over the next three years. The following figure shows a complete breakdown by application of all the disk space used on the IBM mainframe.

SYSTEM DISK SPACE SUMMARY				
<u>Current Applications</u>	<u>Current FY92</u>	<u>Estimated Projections*</u>		
		<u>FY93</u>	<u>FY94</u>	<u>FY95</u>
Administrative Software Applications				
Academic MUSIC/VSE/SQL	254.0	8.0	9.0	9.0
Administrative MUSIC/EMAIL/Scheduling	400.0	40.0	44.0	48.0
Business System (CUFS)	3,066.0	644.0	775.0	940.0
Capital Assets	35.0	3.0	4.0	4.0
CMS/Application System/SCRIPT	1,576.0	157.0	173.0	190.0
Degree Audit System	35.0	16.0	23.0	34.0
Query/Download to PC's	156.0	150.0	150.0	150.0
EZ-LIST/MLS	480.0	48.0	52.0	58.0
Foundation System (CUFS)	235.0	37.0	43.0	50.0
Human Resource System	879.0	88.0	96.0	106.0
Management Information System/SPSS	15.0	10.0	12.0	14.0
Placement and Fragmentation	1,475.0	60.0	60.0	60.0
Student Billing and Receivables	1,073.0	10.0	10.0	10.0
Student Financial Aid System	133.0	57.0	81.0	116.0
Student Registration/Records	4,160.1	601.0	751.0	901.0
Development Appl. Files	3,606.0	68.0	72.0	75.0
Current Applications Total	17,578.0	1,997.0	2,355.0	2,765.0
System Software Applications				
VM/SP	1,598.0	-1598.0	.0	0.0
VM/ESA	4,207.0	200.0	200.0	200.0
Production VSE	1,776.0	-1776.0	.0	.0
Development VSE	1,184.0	-1184.0	.0	.0
Production VSE/ESA	2,404.0	75.0	-75.0	75.0
Development VSE/ESA	1,602.0	50.0	-50.0	50.0
MUSIC	1,074.0	.0	.0	.0
Performance/Epilog/Omegamon	175.0	1.0	1.0	1.0
Security/Top Secret	80.0	1.0	1.0	1.0
Student SQL/VSAM	601.0	.0	.0	.0
Student VSE	666.0	0.0	0.0	0.0
Tape Management/DYNAM	292.0	29.0	32.0	35.0
Temp Space/Sort	661.0	60.0	65.0	70.0
VMLIB	351.0	75.0	75.0	75.0
Administrative MUSIC	802.0	200.0	200.0	200.0
Systems Software Total	17,473.0	-3,867.0	-699.0	707.0
Total Megabytes*	33,051.0	-1,870.0	2,804.0	3,472.0
*Megabytes (1,000,000 characters of information)				

Figure 50. System Disk Space Summary

The disk space is defined by administrative software applications and system software applications. The administrative software application disk space includes storage for all the data files, work areas, and programs that support the application. The system software applications include disk space that is required for the operation of the computer systems software. In some cases the system software must reside separate in its own area. There is usually a 10 to 15 percent waste of disk space caused by fragmentation into space too small to place data, and certain restrictions where data can

be placed. We have identified 3,000 megabytes in the Administrative Software applications as unusable space.

The figure defines the FY92 disk space used of 35,051 megabytes; FY93-FY95 projections are based on the percentage increases expected by the user department for each application. This information was collected via the Administrative Computing Departmental Survey and analysis of file growth patterns over the last three years. We are expecting a growth of about eight percent per year for existing applications.

We are planning to add new or replacement administrative software applications and new and/or replacement systems software over the next three years. The figure below defines a list of the applications with the estimated disk space requirements. Included is a time frame for installation/development of the new applications recommended with the corresponding disk space needs for FY93-FY95.

NEW APPLICATION DISK SPACE				
<u>Administrative Applications</u>	<u>Disk Space</u>	<u>Timeframe</u>		
		<u>FY93</u>	<u>FY94</u>	<u>FY95</u>
CUPS Upgrade	200.0	200.0	.0	.0
HRS Upgrade	200.0	.0	.0	200.0
Online Query	300.0	300.0	.0	.0
Position Control	242.0	200.0	20.0	22.0
Degree Audit Upgrade	50.0	.0	50.0	.0
Space Utilization/Class Scheduling	220.0	200.0	10.0	10.0
Campus Information Systems	200.0	.0	100.0	100.0
Inplant Billing System	220.0	200.0	10.0	10.0
Student Tracking System	220.0	200.0	10.0	10.0
Job Matching System	105.0	.0	100.0	5.0
Registration/Records System	1,643.0	950.0	630.0	63.0
Total-Administrative		2,250.0	930.0	420.0
<u>System Applications</u>				
Netview/TCP/IP	205.0	100.0	100.0	5.0
VM/ESA 1.1	3,600.0	3,600.0	.0	.0
VSE/ESA 1.1	3,000.0	3,000.0	.0	.0
Total-Systems		6,700.0	100.0	5.0
Total Megabytes		8,950.0	1030.0	425.0

Figure 51. New Administrative Application Disk Space

On the new application list are major applications that require significant disk space. Reference the administrative software application section for information on each application. The total space needed for FY93 is 8,950 megabytes, FY94 is 1,030 megabytes, and FY95 is 425 megabytes for new/replacement applications.

A summary of the current systems together with the new applications follows:

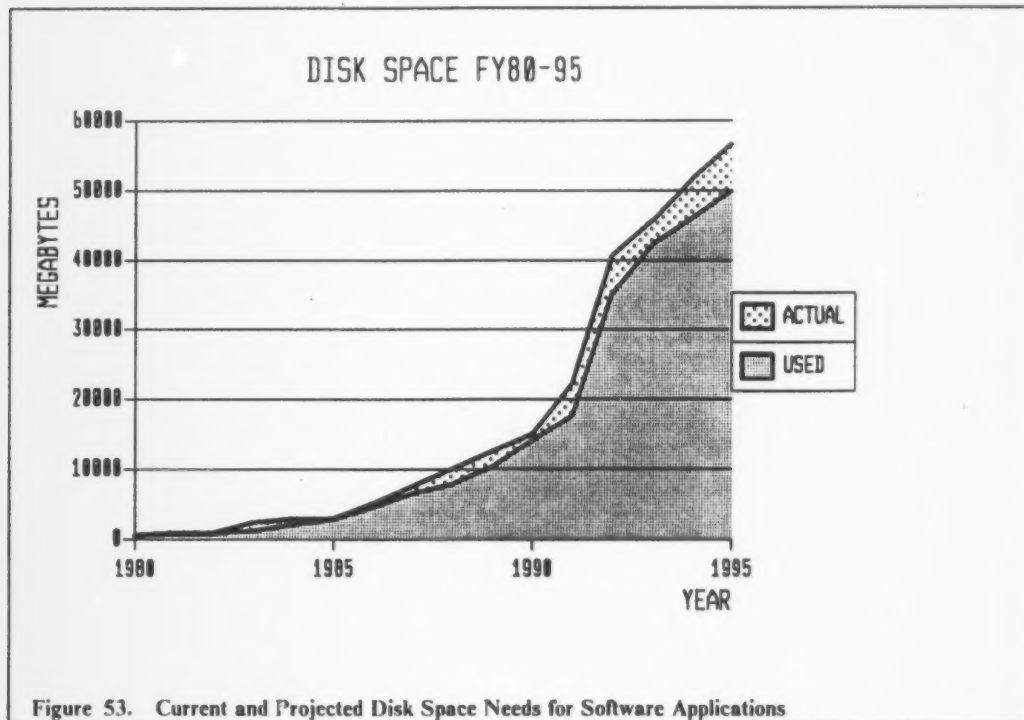
SUMMARY DISK SPACE REQUIREMENTS

<u>Applications</u>	<u>FY92</u>	<u>FY93</u>	<u>FY94</u>	<u>1995</u>
Current Administrative Applications	17,578.0	1,997.0	2,355.0	2,765.0
New Applications	0.0	8,950.0	1,030.0	425.0
Systems Software	17,473.0	-3,867.0	449.0	707.0
Total Megabytes	35,051.0	7,080.0	3,834.0	3,897.0

* Megabytes (1,000,000 characters of information)

Figure 52. Summary Disk Space Requirements

We will increase disk space usage on the IBM by 7,080.0 megabytes in FY93, 3,834.0 megabytes in FY94 and 3,897.0 in FY95 to meet the current and new administrative application system software needs. The following figure shows the history of disk space since 1978 with total available vs. total used with the estimated projections based on the above figure.

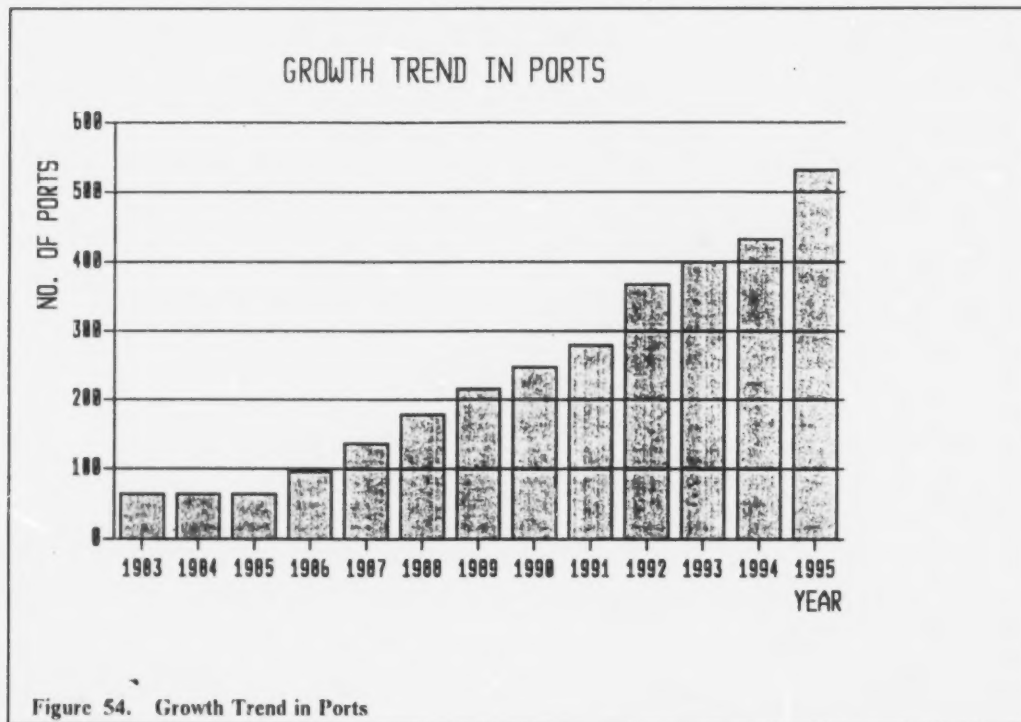


We currently have about 5,800 megabytes of disk space remaining, of which 3,000 megabytes cannot be used as stated previously. We need 7,080 megabytes in FY93, 3,834 in FY94, and 3,897 in FY95 for the new applications and the existing application growth. One disk drive provides 2,404 megabytes of additional disk space. In order to maintain adequate space, two 3380s will be needed in FY93, two in FY94, and two in FY95. We are currently using 16 3380 disk drives (D and E models) attached to two 3880 control units. Maintenance support for these models will be dropped as of FY95 due to the introduction of newer technology disk drives. The new units to be acquired should be model J wherever possible. In order to attach the additional disk drives required, we must acquire an additional control unit. We are recommending the purchase of a 3990 model 2 control unit in FY93. This control unit can support additional channel connections for improved throughput to the model J disk drives.

In FY95, as the IBM support is being dropped for the 16 disk drives, we are recommending that two 3990 model 2 control units be purchased for the eventual replacement of the two 3880 control units and 16 disk drives. Third party support for the disk drives will have to be used until the replacement is complete. Eight additional channels will be needed to attach the new control units.

Ports

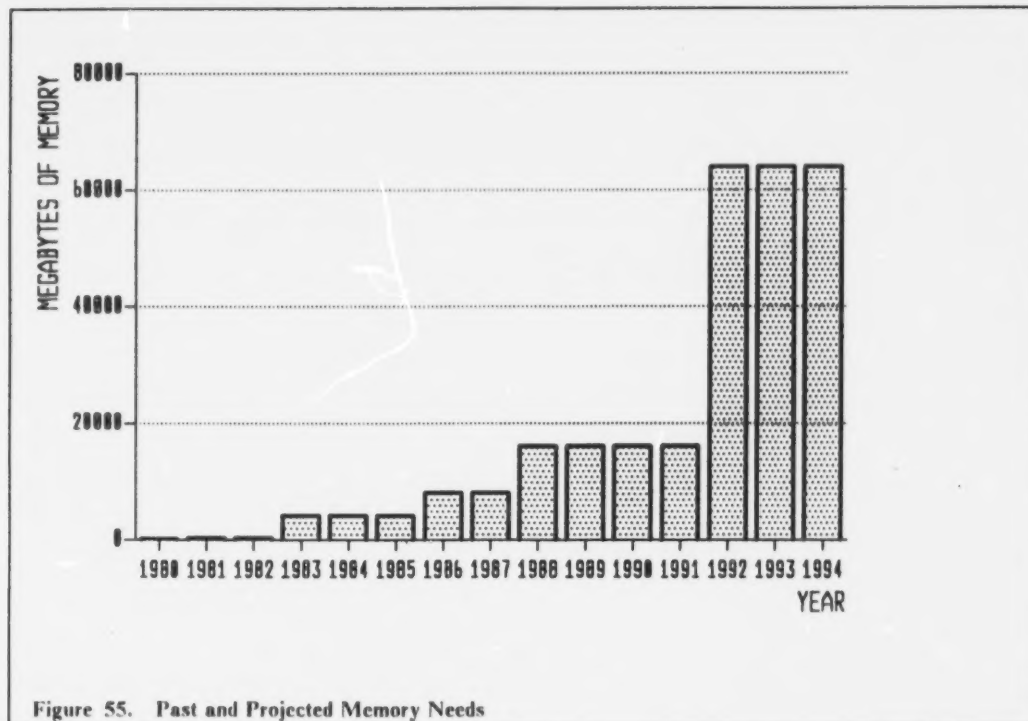
In order to connect terminals, micros, and printers to the mainframe, access ports are needed. The following figure shows the history of ports over the last 12 years. From the graph you can see the tremendous growth that we have experienced in the last three years. In FY91 88 additional terminals and/or microcomputers were connected to the system. As more terminals are connected, the need for other resources grow. We are currently using 90% of the ports available on the system. We will need 2 additional control units: one unit (32 ports) to serve the users in M Building in FY93, and one unit (32 ports) to serve the other main campus areas FY94. We are not planning for additional controllers beyond FY94 because of the campus-wide telecommunications systems. We are expecting the number of access to increase by 100 users when campus-wide electronic mail is available to faculty.



CPU Memory

The CPU memory defines the number of computer programs that can be executed at one time. Our current system provides 64 megabytes or 64,000,000 characters of information. The memory capacity determines the number of programs that can be run at one time. These programs consist of the operating system and the administrative programs. When additional user ports are added to the system and more programs are executed the system cannot handle all the programs and paging occurs. Paging results from programs competing for more main memory space than is available. The system swaps programs from main memory to disk space. When the paging rate increases, the user receives a slower online terminal response time and system performance degrades.

The following figure shows the memory capacity over the last nine years with the projected need through FY95. If we continue to add additional users to the system, add ports and increase the number of computer programs that are executed, additional memory is needed.



Our current paging rate per second ranges from 10 to 15. As the paging rate increases, user response time decreases. As we add additional users the paging rate will increase, therefore causing inadequate response times. Industry standards recommend a memory upgrade when paging rates reach 15 to 20. With the growth of ports as shown in the above figure, the need for additional memory will increase. The 64 megabytes acquired with the new processor should see us through FY95.

CPU in MIPS

The CPU in MIPS defines the number of instructions per second that can be executed. The higher the number the faster the computer. We currently have a 8 MIPS computer that would execute at a speed of 8,000,000 instructions per second. The following figure shows the history of the MIPS capacity.

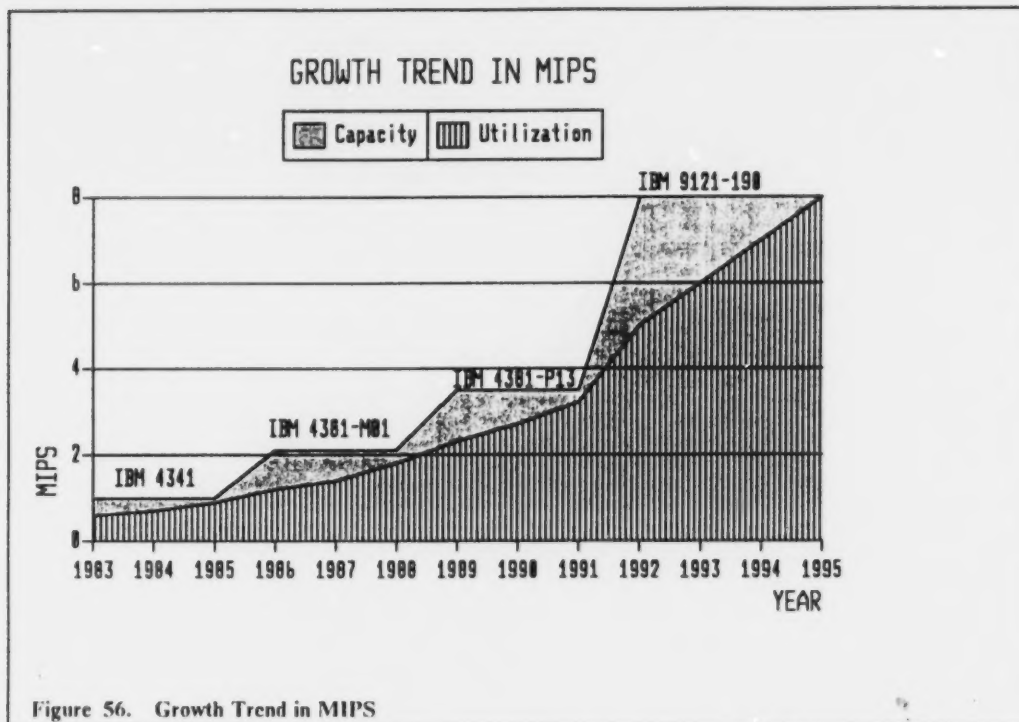


Figure 56. Growth Trend in MIPS

From the graph every three years the system capacity increased by 100 percent to meet user application demands. Currently we have a 40 to 60 percent CPU utilization rate. The area defined by level shows the average growth of the CPU utilization for each fiscal year. When the CPU rate averages 70 percent utilization we will need a CPU upgrade. The recent CPU upgrade should last two to three years.

Magnetic Tapes

The integrity of a computer system is greatly dependent upon the safety and security of its data files. We currently perform magnetic tape backups of all online, VSAM, database, user libraries, catalogs, JCL libraries, VM user accounts, MUSIC, service machines, VMLIB, reader queue files and CICS journaling activity. In addition, we also backup all online files each morning after the nightly batch production jobs have completed. In an average nightly schedule of 14 production hours, we will produce 60 to 65 magnetic tape backups. Approximately 35 percent of our production schedule involves the creation of magnetic tape backups. Planned increase of software applications and increased projected enrollment will require additional magnetic tapes to be incorporated into our backup procedures.

Currently our magnetic tape backups are performed on six IBM 3480 cartridge drives. The migration to this technology has afforded us a savings in floor space, a reduction in the number of tapes used per job and reduction in the time spent per job because of their higher recording density. The time spent per job could be further reduced by adding the tape compression feature to the cartridge system.

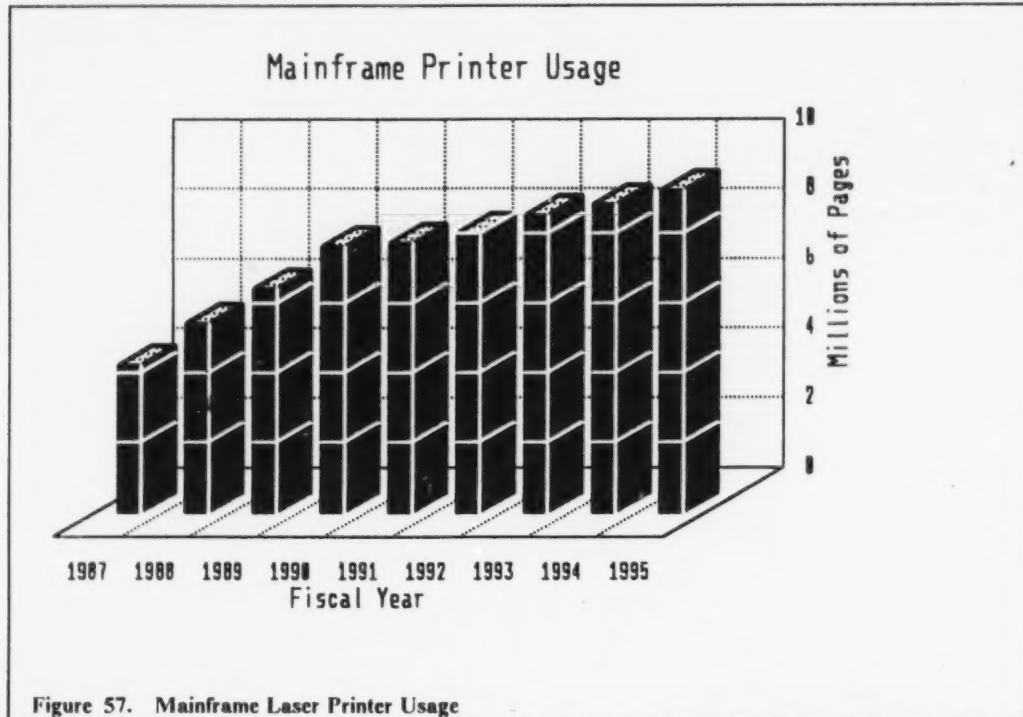
Printing

We currently have two mainframe printers, an IBM 4248 impact printer and an HP 2689A laser printer. The IBM printer is used to print specific forms for the administrative software applications

defined previously. The special forms can consist of payroll checks, grade mailers, W-2's, and several miscellaneous forms that need multiple part forms. Increased college enrollment has a direct impact on the amount of printing performed by both mainframe printers.

The purchase of the HP laser printer in 1986 replaced the impact style printing with new laser technology for administrative reports. At that time we needed greater capacity and higher speed. The HP laser printer has satisfied that need for over five years. It produces output at 40 pages per minute. In FY92 a more advanced laser printer will be installed to replace the HP printer. The printing speed will double and allow us to produce twice as much printed output per minute.

The following figure shows the growth of mainframe printing on the laser printer since December 1986.



In November 1991, our purchase order for laser paper totaled over 6.5 million sheets. This is an average annual increase of approximately 625,000 sheets per year since FY87. If this growth pattern of paper consumption continues, the laser printer replacing the HP will need to be evaluated for its ability to keep up with the demand on printed output.

Recommendations

The following recommendations will provide the necessary hardware to support the predicted application growth:

- Expand solid state disk unit in FY93.

We are recommending adding additional memory to the solid state disk unit to maintain less than one second response time on the mainframe for user applications. The estimated budget is \$15,000.

- Expand and upgrade disk space to support future and current applications in FY93, FY94 and FY95.

Provide additional disk space for the data growth identified by the software systems. Two IBM 3880 disk drives will be needed in each fiscal year for an estimated budget of \$11,200 in FY93, \$20,000 in FY94 and \$10,000 in FY95.

- **Expand disk control units and channels for expanded disk space requirements in FY93 and FY95.**

We are recommending the purchase of one additional IBM 3990 disk control unit in FY93 to support the additional disk drives mentioned above. This unit will cost \$35,000. Two IBM 3990 disk control units and eight channels are also being recommended to position us for replacing the disk drives in FY95. We are estimating the control unit at \$40,000 and the channels at \$50,000 in FY95.

- **Upgrade the current IBM 3480 cartridge system controller and tape drives in FY95.**

We are recommending upgrading the 3480 cartridge system controller to add the data compression feature which would decrease system production time. The feature will cost \$15,000 in FY95

Communications and Networking

Communications now plays a major role and will play a larger role in the future in meeting the information needs of the institution. As the regional centers grow and the demand for new services increases so will information needs as defined by the academic and administrative section of the plan. The only way to support the volume of information in the form of voice, data and video traffic is to provide high speed highways throughout our district to support information flows.

We currently have about 500 terminals/personal computers that are connected to the IBM mainframe and 900 personal computers located on campus. The Library System has about 55 terminals connected to that system. New applications are projected in FY93-95 to support the institution. All of this information may be stored on various computer systems on and off campus. Information residing on one system must be able to be transferred to other systems. This full integration is termed "connectivity" between systems. In order to accomplish connectivity and our many long-range goals we will eventually have to connect all current and future systems, mainframe, minicomputers, microcomputers and local area networks together. The following figure shows the connectivity needs of the institution as defined by the users.

CONNECTIVITY NEEDS						
DEPARTMENTS	1	2	3	4	5	6
PRESIDENTS						
Office of President						
Auditor						
CENTRAL CAMPUS						
Office of Provost						
Instruction			X		X	
Business & Services			X		X	
Communications			X		X	
Humanities					X	
Natural Sciences	X			X	X	
Occupational & Vocational Education						
Social & Behavioral Sciences						
Student Affairs	X			X	X	
Learning Resource Center	X	X			X	X
OPEN CAMPUS						
Office of Provost						
Academic Alternatives	X	X	X		X	X
Business & Professional Institute	X		X		X	
Institutional Affairs						
Community Education			X		X	
Regional Center - East		X	X		X	
Regional Center - North	X	X	X		X	
Regional Center - Southwest		X	X		X	
Regional Center - Glendale Heights		X	X		X	
ADMINISTRATIVE AFFAIRS						
Office of Vice President						
Auxiliary Enterprises					X	
Campus Services	X				X	
Financial Affairs	X			X	X	X
Human Resources	X				X	X
Public Safety	X				X	X
Purchasing	X			X	X	
PLANNING & INFORMATION						
Office of Vice President						
Admissions, Registration & Records	X				X	
Computing and Information Systems	X		X		X	
Faculty Suites	X		X	X	X	
Grants						
Research & Planning				X	X	
EXTERNAL AFFAIRS						
Office of Vice President						
Campus & Community Events					X	X
Development			X		X	
Public Information/Media Production	X		X		X	
*1-LAN 2-Regional Centers 3-Library System 4-National Networks 5-Buildings on Campus 6-External Data Bases						

Figure 58. Connectivity Needs for the College

The table is divided by departments which defines which types of systems from their area that will need to communicate. The connection consists of local area networks (LANs), regional centers, library system, external networks, other buildings on campus and external data bases. The most requested access is to people located in other buildings, second was the library system and third to other local area networks on campus. As other software applications are added connectivity becomes more important.

The campus-wide network is needed to provide connecting and/or access to the different systems.

By taking this approach we can provide connectivity throughout the college district allowing electronic communications for:

- Faculty to communicate with students
- Students to communicate with faculty
- Faculty to communicate with administrators
- Administrators to communicate with faculty
- Administrators to communicate with administrators
- Administrators to communicate with staff
- Staff to communicate with administrators

The direction of the industry in communications is to combine voice, video and data on the same cabling system. Currently all data communication is handled by Computing and Information Systems with a separate cabling network. Video communications is handled by Academic Alternatives with a separate cabling network. The telephone communications is handled by Auxiliary Enterprises with a separate cabling network. There are major reasons for integration:

- Technology is available to permit data, video and voice to be carried simultaneously
- Many vendors offer data, video and voice communications products allowing a single vendor support
- Users are finding advantages in linking data, video and voice equipment together for reduced space, shared staffs, improved operation and support, and planning with resultant cost savings

Many institutions across the country have integrated or are planning the integration of voice, video and data communications. We will need to plan for the eventual integration of voice, video and data on campus if we plan to stay current with technology. The cost savings will be enormous.

There are many advantages of networking on campus. Networking will allow individual users to have access to all hardware and software on the system. Data can be moved from one system to another without reproducing the data, i.e., download data from mainframe to PC or print a report on a local printer or remote printer. The advantages of using a network include the following:

- Improvement in security
- Improvement in reliability and maintenance
- Improvement in access and distribution
- Cost savings through network licensing
- Collection of statistics on usage of software and hardware
- Access to multiple printing devices
- Reduction of communication costs
- Reduction in people support

The college is presently investigating the future carrier requirements and expanded communication system needs of the college. The close integration of communications at the college needs to be thoroughly investigated in light of current advances in technology and the growing needs of the college. The communications environment includes an external as well as internal model that must be evaluated against the current trends and directions of the institution in reaching the full potential of emerging technologies. As a plan is shared with the Telecommunications Committee, the computer plan will play a supportive role in merging the existing requirements with the directions

of the future. Appendix S shows a diagram of the colleges future network configuration. The diagram connects all buildings on campus with a fiber backbone network supporting the future voice, video, and data communications needs of the college. For greater detail please review the Campus-Wide Telecommunications Plan support in voice, video and data communications.

Recommendations

In order to effectively utilize information technology, we are recommending the following:

- **Expand dialup access in FY93.**

Expand the IBM 7171 from forty-eight to sixty-four ports to provide regional center dial-up access to the mainframe computer systems. The estimated cost is \$10,000.

- **Provide access to a state-wide network in FY93.**

The state of Illinois is setting up a state-wide network to allow colleges, universities, primary and secondary schools, libraries and businesses to communicate. We are recommending connecting the college to the state-wide network at an estimated cost of \$10,000.

- **Expand terminal access in FY93 and FY94.**

Provide two 3174 controllers, one in FY93 and one in FY94 to provide sixty-four additional ports for end user terminals and microcomputers. The two controllers are budgeted at \$5,000 each.

- **Provide a campus-wide cabling system.**

A telecommunication committee has developed a report on the college's telecommunication needs. The plan for telecommunications connects central campus, open campus, and the regional centers to provide a telecommunications network that allows connectivity of computer systems and the continuing support of the system. The proposal provides a cabling system that would support voice, video, and data. This will support such applications as computer data systems, telephone systems, interactive video, security video, energy management, card security system, etc. The telecommunication plan provides funding to connect the various systems and local area networks on campus. We recommend moving ahead with the project as soon as possible. There are several recommendations in the plan that are dependent on the campus-wide cabling system.

Action Plans and Financial Considerations

This section identifies each recommendation from the central computing section and defines the estimated costs and time frame for acquisition and implementation. The following table shows each major computing area with the items that need to be acquired over the next three years. The table defines the capital cost and the operating budget cost. The operating budget cost is the maintenance amount needed to support the hardware/software. Also included is an estimated time frame. This identifies when the item should be acquired, installation date, and estimated production date.

CENTRAL COMPUTING					
Item	Budget Estimate		Acquire	Time Frame Installation	Production
	Capital	Operating			
Hardware					
(1) Disk Controller	\$35,000	4,800	Aug 92	Oct 92	Nov 92
(2) Disk Space	11,000	6,000	Aug 92	Oct 92	Nov 92
(1) Terminal Controller	5,000	300	Aug 92	Oct 92	Nov 92
(1) Dialup Expansion	10,000	300	Aug 92	Oct 92	Nov 92
(1) Solid State Expansion	15,000	500	Aug 92	Oct 92	Nov 92
(1) State Network		10,000	Aug 92	Oct 92	Nov 92
(1) Terminal Controller	5,000	300	Aug 93	Oct 93	Nov 93
(2) Disk Space	10,000	6,000	Aug 93	Oct 93	Nov 93
(2) Disk Space	20,000	6,000	Aug 94	Oct 94	Nov 94
(2) Disk Controllers	40,000	9,600	Aug 94	Oct 94	Nov 94
(1 set) Mainframe Channels	50,000	1,000	Aug 94	Oct 94	Nov 94
(1) Terminal Controller	5,000	300	Aug 94	Oct 94	Nov 94
(1) Tape Compression	15,000	1,500	Aug 94	Oct 94	Nov 94
Total-Hardware	\$216,000	\$46,300			
Total-Central					

Figure 59. Central Computing and Communications Budget Summarized

The total amount needed for central computing and Communications is \$216,000 of capital funds and an increase of \$46,300 in the operating budget. See the final section of the plan for a breakdown by fiscal year.

SUMMARY RECOMMENDATIONS AND FINANCIAL CONSIDERATIONS

Overview

This chapter provides summary recommendations and financial considerations for academic, administrative, and central computing for fiscal years 1993-1995. Included are sections summarizing the staffing needs, the total institutional financial considerations with various funding alternatives. See the individual sections of the plan for details on the recommendations. Appendix T shows a one-page summary of the planning cycle for all projects identified in this plan.

Academic Computing

Summary Recommendations

The following section provides a summary of the recommendations for Academic Computing. The recommendations define the strategic direction and resources necessary to meet the goals of academic computing while satisfying the student growth in the use of computers from FY93-95. The resources are divided into hardware, software and support.

Hardware & Software

The following recommendations provide the hardware and software to meet the growth in student and faculty computing for the next three years.

- Student

- **Replace computer labs in K123 in K Building in FY93.**

Currently K123 in K Building has 50 IBM PC workstations for student use. The workstations need to be upgraded to use the most current software and networked for easy software distribution. We are recommending the lab be upgraded in FY93 at an estimated cost of \$200,000.

- **Provide computer lab for Communications Division in FY93.**

The communications division has had tremendous growth and is projecting a 100 percent increase in their computer usage by FY95. We are recommending a 30 workstation computer lab in FY93. As an interim solution until the additional space can be provided, we recommend moving the workstations from K123 to central campus where a communications lab may be setup and networked with the Seaton Computing Center. This will cost \$15,000.

- **Provide additional workstations for Business & Services in FY93.**

We are recommending moving 20 workstations from K123 to the Office Careers lab in the IC building in FY93. These units would be used to provide interim workstations until new units can be purchased in future years.

- **Expand LRC with Macintosh systems in FY93.**

Currently the LRC lab has only two Macintosh systems for student use. We are recommending adding two Macintosh systems to the lab in FY93.

- **Upgrade LRC computer workroom in FY93.**

The LRC computer workroom contains 22 IBM PS/2 workstations. Each workstation needs to be upgraded with additional memory and a mouse device. The upgrade will allow the workstations to use current and future application software at a cost of \$10,000.

- **Investigate mainframe student applications vs. microcomputer based systems in FY93.**

Today several Computer Information Systems courses use the mainframe computer to teach instruction. Several systems exist that allow student mainframe systems to use microcomputer-based systems. Because of on-going concerns of security and administration cost, we are recommending that the student mainframe systems be investigated for use on microcomputers in the Seaton Computing Center.

- **Develop computer recycling/replacement program in FY93.**

Currently several labs on campus have older technology which may or may not be suitable for use in the future. We are recommending the development of the plan to recycle/replace systems on campus to provide efficient use of resources.

- **Standardize application and systems software in computing labs in FY93 and FY94.**

When possible, steps should be taken to adopt and promote standards for the various general-use programs such as word processing, database, graphics, communications and operating systems software. We budgeted \$25,000 for FY93 and \$10,000 for FY94 to provide the additional funds to keep up-to-date with the most current academic software in the networked labs.

- **Upgrade Seaton Computing Center in FY93, FY94 and FY95.**

We are recommending increasing the memory in all the workstations in the Seaton Computing Center. This will allow us to use the newer technology software. This will cost \$30,000 for 200 workstations or \$10,000 each year.

- **Monitor system utilization in FY93, FY94 and FY95.**

Each computing lab should be monitored on a quarterly basis to collect usage data on the computer systems. This will provide accurate data on computer usage. We should continue to determine how long students are in the open labs and classrooms and what courses they are working on.

- **Upgrade LRC CD-ROM network in FY93, FY94 and FY95.**

Currently the LRC provides a CD-ROM network system supporting sixteen databases. The usage of the system continues to grow. We are recommending adding additional servers to provide ten additional databases for FY93-95. The estimated cost is \$4,000 in FY93, \$4,000 in FY94, and \$8,000 in FY95.

- **Expand dedicated labs where needed in FY93, FY94 and FY95.**

Growth in dedicated or individual labs used by divisions, where space is available, should be expanded. The divisions are responsible for budgeting for their own hardware and software for these labs.

- **Provide student open computer labs at regional centers in FY94.**

The growth of computer usage at the regional centers will require additional workstations for students. We are recommending the placement of a new 30 workstation open lab at Naperville and at Westmont in FY94. Each workstation will be connected to the existing network to provide efficient software distribution and support to students. This will cost \$75,000 at each site.

- **Expand testing labs at the regional centers in FY94.**

Currently a testing lab exists at several locations in the district to provide student placement tests for Math and English. We are recommending expansion of the testing labs to Westmont, Naperville, and Lombard in FY94. An estimated \$6,000 is budgeted in FY94.

- **Expand learning labs in FY94.**

Currently a learning lab exists on Central Campus to provide student self-paced courses through Academic Alternatives. Because of the growth of the learning lab, we are recommending the expansion of learning labs on central campus by three workstations and two at each of the regional centers at Naperville, Westmont, Lombard, and Glendale Heights. An estimated \$32,000 is budgeted for the expansion.

- **Expand testing lab on Central Campus in FY94 and FY95.**

Currently the testing lab supports 20 workstations to provide pre-course testing for students. With the growth of the number of students and increased number of tests, we are recommending the testing lab increase by 10 workstations in FY94 and 20 in FY95. We estimate the cost of \$24,000 in FY94 and \$60,000 in FY95.

- **Provide CDI expansion in FY95.**

We are recommending CDI (Computer Digital Interactive) be added to the existing computer LRC lab to provide students access to new technology. CDI provides interactive video applications to be used on a network. The estimated budget is \$10,000 in FY95.

- **Network institutional computing labs**

We are recommending the continued networking of student computer labs on campus. Any labs that can share software should be networked. All of the cross discipline labs will be networked by FY93. Each dedicated lab should be reviewed for possible networking. This recommendation is dependent on the campus-wide telecommunications plan.

- **Expand computing labs.**

Student contact hours for computing is projected to grow at a 23 percent annual rate. Additional computing classrooms, open labs, and specialized labs will be needed in order to meet the continuing growth over the next five years. It is recommended that the college add the appropriate space to support 400-500 more workstations. This is an estimated budget of \$2,500,000 for hardware and software. This amount is not included in the budget of this plan.

- Faculty

The following recommendations will increase faculty access to computers and provide access to the newer technologies of computer use in instruction.

- **Upgrade workstations in faculty office areas in FY93.**

The current usage of the faculty suite workstations has increased significantly over the last four years. Many of the workstations have only one meg of memory and 20-40 megabytes of disk space. Up to six faculty may use each workstation resulting in limited space for programs and data for each faculty member. In addition memory is needed to use some of the new technology software available to faculty. We are recommending 60-80 megabyte disk drives and four meg of memory for each workstation at a cost of \$18,500.

- **Setup an inventory of software for the college in FY93.**

As software is purchased, information will be collected for each item and added to a software database. Instructional areas will be notified of these purchases.

- **Expand faculty work area in M Building in FY93.**

Currently we have one IBM PS/2 workstation available in M building for faculty access. With additional faculty moving to M building, we are recommending the expansion of the M building work area with one Macintosh II and one IBM PS/2 Model 70 and a laser printer. We are budgeting \$12,000 for this equipment.

- **Provide faculty office areas with microcomputers in FY93, FY94 and FY95.**

Continue to provide faculty office areas with microcomputers to be used in support of these activities:

- Preparation of course materials, management of instruction
- Instructor-student consultation concerning computer-related assignments
- Exploration of new applications, development of instructional software
- Networked access to lab software
- Networked communications with other faculty or support staff

Specific requests include the purchase of 36 additional microcomputers and software over the next three years, with 12 systems purchased each year with additional units to be placed in each faculty area. This will provide a faculty/workstation ratio of three to one. The estimated budget is \$36,000 each fiscal year.

- **Provide new workstations for checkout in FY93, FY94 and FY95.**

Currently we have five laptop computers in the library for checkout to faculty. The workstations are not capable of utilizing the newer technology software. We are recommending purchasing three additional units each year for faculty checkout. The estimated budget is \$10,000 for each fiscal year.

- **Provide funding for the purchase/investigation of new computer hardware technologies in FY93, FY94 and FY95.**

A Hardware Grant Program was created in 1988 to assist faculty in the investigation of new technologies. We need continued funding to meet faculty demand for new instructional/informational delivery systems (i.e., ROM Disk, interactive video, graphics). Funding of these projects are granted by a committee after review of the proposal and its impact on the related areas of instruction. A total of \$15,000 is recommended for this program for FY93, FY94 and FY95.

- **Expand the faculty work area to include multimedia capabilities in FY93, FY94 and FY95.**

The faculty work areas consist of two IBM model 70 and two Macintosh II workstations in the Seaton Computing Center and one IBM Model 70 in M building. Each faculty work area should be upgraded to include multimedia capabilities. A total of \$60,000 is recommended for this expansion with \$20,000 in each fiscal year.

- **Provide networking to all faculty suite workstations in FY94.**

A network will allow faculty to access the Seaton Computing Center, IBM mainframe and library system and to communicate with students (and students to communicate with faculty) in any of the networked labs. All faculty counseling areas need access to the mainframe to provide information to assist in student counseling. This will require interface cards for each workstation. The networking of faculty suites is recommended in FY94 at a cost of \$30,000. This recommendation is dependent on the campus-wide cabling system.

- **Continue to provide funding for the purchase/investigation of new academic software applications in FY93.**

We are recommending an additional \$5,000 be included in the software program for faculty. This is currently provided in Computing and Information Systems operating budget. This will increase the budget to \$40,000 per year.

The funds can be used to provide faculty software for the following:

- New instructional/informational delivery systems.
- Software development tools, such as application software, authoring systems and programming languages.
- Specific software programs to be made available to all faculty as an aid to the management of instruction.
- **Involve more faculty in the search for instructional applications.**

Leadership is needed in organizing those activities which promote the search for new applications. This includes those steps involved in identifying and integrating software into instruction. These may include:

- Evaluation and development into the curriculum
- Selection and preview of software
- Review of software purchases
- Integration of software into instruction
- Integration of software into lab facilities and preparation of student support materials

Because faculty involvement is essential for the identification and evaluation of instructional applications, incentives need to be provided which will encourage them to take an active role in the process. Some incentives include release-time, summer pay, the possibilities of royalties, funding of research and development, projects and peer recognition for individual achievement.

Support

The following recommendations define the levels of support needed to meet the student and faculty increases in computer use.

- Student

Based on projected increases in student usage and assuming that over the next three years the current level of student support will be maintained, we have projected additional personnel will be needed for the next three years. The recommendations follow:

- **Additional support for the Seaton Computing Center in FY93.**

The Seaton Computing Center came online fall 1990. The center has increased the operational hours in order to meet the demands of the class schedules. Currently the hours open exceeds the hours available by supervisor staff. We are recommending a twenty hour per week lab supervisor to provide lab-aide supervision and security to the building.

- **Provide part-time students support for the communications computing lab in FY93.**

With the added computing labs additional part-time students will be needed to provide support for the communications lab.

- **Establish a student support network.**

Part of the computing knowledge network referenced in the faculty support section can be devoted to the support of student computer use. Each class can have access to an information account on the network which allows for communication with faculty, lab support staff and

other Academic/Administrative areas of the college. The student support network will improve communication between present areas of support and the increasing number of students using computers. This recommendation is dependent on the campus-wide telecommunications plan.

- Faculty

As stated earlier, faculty are using computers more and more each year. The following recommendations are necessary to maintain the same level of support.

- **Provide additional faculty consulting support in FY93 and FY95.**

The use of computers by faculty is growing at a very high rate. As faculty have access to more workstations each year, they need to be supported in answering their technical questions and their use of new technologies. It is important to respond to faculty in a timely manner. We are recommending two positions, Senior Academic Analyst in FY93 and a Senior Academic Analyst in FY95.

- **Continue staff development and computer training.**

Depending on their level of expertise, faculty should continue to increase their knowledge of computers. Below is a hierarchy of the different levels of computer literacy.

Level 1 - Knowledge of the operation and parts of the computer. Exposure to general-purpose applications.

Level 2 - Use of computers regularly for professional use.

Level 3 - Use of computers in existing curriculum.

Level 4 - Reassessment of curricular goals and investigation of new technologies.

The last two levels have the greatest impact on the use of computers in instruction. The last two levels cannot be attained until the first two levels of literacy are achieved. It is recommended that staff development and computer training activities continue to promote computer literacy at the college. Faculty need to be encouraged to attend these workshops. Faculty at the fourth level add to the colleges computer knowledge resource. This knowledge base can also be increased by funding faculty trips to other colleges and computer hardware and software seminars. The faculty development program should continue over the next three years.

We are recommending developing additional training courses utilizing new technology used in instruction. These include multi-media and critical thinking software.

- **Provide computer training to faculty for credit.**

A training program should be set up to provide faculty with the necessary incentives to use the computer for class management, class preparation and instructional support in the curriculum. Faculty should be encouraged to participate and assist in their support training. This can be accomplished by providing credit to the faculty enrolled in the workshops and release time for the faculty with the desire to assist in teaching workshops to other faculty. The continued support will be provided by Computing and Information Systems.

- **Organize and distribute documentation.**

It is essential to provide high quality documents which aid faculty in using computer resources and provide information that help in the investigation of new applications. This includes an index of computer hardware, software and computer expertise; lists of manuals and documents and where to find them; information about existing systems and applications; information about software resources; minutes of committee meetings and new projects that are currently in progress. It is recommended that a faculty guide to the college's computing resources be compiled and distributed.

Financial Considerations

The following figure provides a breakdown of the computing costs of Academic Computing by fiscal year. The capital amounts are one-time funds. The operating amounts are the recurring cost of supporting the equipment and software each year.

ACADEMIC COMPUTING						
Item	FY93		FY94		FY95	
	Budget	Estimate	Budget	Estimate	Budget	Estimate
	Capital	Operating	Capital	Operating	Capital	Operating
Hardware						
Student Resources						
Student Computer Labs						
IBM PS/2-(50) K123	\$100,000	3,000				
Printers-(12) K123	4,000	120				
Network-K123	70,000	2,100				
Furniture-K123	35,000	1,050				
Communications Lab	15,000	450				
Memory Seaton Center	10,000	300	10,000	300	10,000	300
LRC Computer Labs						
PC Memory/Mice Upgrade	10,000	300				
CD-ROM Expansion	4,000	120	4,000	120	8,000	240
CDI Expansion					10,000	300
Macintosh II (2)	7,000	210				
Regional Center Labs						
IBM PS/2-(30) Naperville			\$60,000	\$1,800		
Printers-(7) Naperville			3,000	90		
Network-Naperville			12,000	360		
IBM PS/2-(30) Westmont			60,000	1,800		
Printers-(7) Westmont			3,000	90		
Network-Westmont			12,000	360		
Testing Computer Labs						
IBM PS/2-(1) Naperville			2,000	60		
IBM PS/2-(1) Westmont			2,000	60		
IBM PS/2-(1) Lombard			2,000	60		
IBM PS/2-(10) Central Campus			20,000	600		
IBM PS/2-(20) Central Campus					40,000	1,200
Network Upgrade Central Campus			4,000	120	15,000	450
Learning Computer Lab						
IBM PS/2-(2) Naperville			4,000	120		
IBM PS/2-(2) Westmont			4,000	120		
IBM PS/2-(2) Glendale Heights			4,000	120		
IBM PS/2-(2) Lombard			4,000	120		
IBM PS/2-(3) Central Campus			6,000	180		
HP Laser Printers-(5)			10,000	300		
Faculty Resources						
Faculty Work Area						
IBM PS/2-(1) M Building	5,000	150				
HP Laser Printer M Building	2,000	60				
Macintosh II-(1) M Building	5,000	150				
Multimedia Upgrade	20,000	600	20,000	600	20,000	900
Faculty Grants						
Suite Computer Grant	36,000	1,080	36,000	1,080	36,000	1,080
Hardware Grant	15,000	450	15,000	450	15,000	450
Software Grants		5,000				
Network Faculty Areas			30,000	900		
Faculty Suite Upgrade	18,500	555				
Laptop Computers	10,000	300	10,000	300	10,000	300
Software						
Lab Software		25,000		10,000		
Total-Academic*	\$366,500	\$40,995	\$337,000	\$20,110	\$164,000	\$5,220

*Staffing support not included in total.

Figure 60. Academic Computing Budget Summarized

February 7, 1992

The total capital amount requested for Academic Computing is \$867,500 for FY93-FY95. This is \$366,500 in FY93, \$337,00 in FY94 and \$164,000 in FY95. The operating budget will need to increase by \$40,995 in FY93, \$20,110 in FY94 and \$5,220 in FY95 to provide continuing support for the capital items.

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Administrative Computing

Summary Recommendations

The following section provides a summary of the recommendations for Administrative Computing. The recommendations are divided into software administrative applications and support needs.

Administrative Software Applications

The following recommendations will support the current administrative software applications and the new applications that are needed for the future. Please refer to the Administrative Computing section of the Institutional Plan for Computing for more detail on each system recommendation.

- **Provide student tracking system in FY93.**

We are recommending the purchase and/or development of a student tracking system which allows longitudinal data to be collected on students. The estimated budget is \$20,000 in FY93.

- **Provide a space utilization/classroom scheduling system in FY93.**

As space on campus becomes limited, efficient management of classroom space becomes more important. We are recommending the purchase of a classroom scheduling/space utilization system to improve the management of space. This system is estimated at \$50,000 in FY93.

- **Provide counseling scheduling system in FY93.**

We are recommending developing a counseling scheduling system to provide students a faster method of scheduling appointments with college counselors. The system will be developed in-house by staff and by consulting funds available in the Computing and Information Systems operating budget. The estimated cost is \$30,000.

- **Replace scanning system in FY93.**

The current scanner system is 12 years old and is very expensive to maintain. We feel a newer model scanner based on a PC will meet our needs. The budget for the scanner is \$30,000. We feel a new scanner has a payback period of 3 years. We are recommending to process under the college's risk fund.

- **Expand the library system in FY93, FY94 and FY95.**

We are recommending the library system be expanded to provide printing, additional terminals and ports each year. In FY93 and FY94 we are recommending three terminals each year. Because of the LRC addition, five additional terminals and a CPU upgrade will be needed to meet student demand. The estimated budget is \$13,000 in FY93, \$9,000 in FY94, and \$80,000 in FY95.

- **Update existing mainframe applications in FY93, FY94 and FY95.**

We recommend the following mainframe applications be updated with the most current release; Financial System in FY93 and FY95, Degree Audit in FY94, and Human Resource System in FY95.

- **Purchase computer equipment for new employees in FY93, FY94 and FY95.**

Each year new employees are hired at the college to provide additional support for the user department. Many of the new employees require a computer to perform their job. In the past funds were not set aside for this purpose resulting in less productivity for employees needing a computer immediately on employment. We are recommending purchasing computer equipment for new employees needing a system. We budgeted \$10,000 for four systems in each year to fund this request.

- **Provide inplant management information system for Business and Professional Institute in FY94.**

We are recommending the internal development of an Inplant Management Information System for Business and Professional Institute that will integrate with the existing student billing and financial systems.

- **Provide a job matching system in FY94**

We are recommending a job matching system be acquired to provide Career Planning and Placement a system to assist students in matching qualifications with job availability. A donation of a system has been identified.

- **Expand automated voice response system in FY94.**

We are recommending expanding the current 16 line voice response system from 16 to 32 ports. This will provide additional functions while providing additional accesses for student touch tone registration. The estimated budget is \$30,000.

- **Provide a campus information system in FY94 and FY95.**

We are recommending the purchase of a campus information system in FY94 to provide information access to students, faculty and staff. The system will provide generalized access to campus events and activities, phone directory for faculty and staff, employee benefit information, athletic scheduling, course descriptions, and/or other beneficial information. The access devices may be touch screen and/or keyboard entry. Kiosks should be located at various locations on campus. We are recommending \$20,000 in FY94 and FY95. Implementation is limited until the campus-wide cabling system is completed.

- **Provide an imaging system for Human Resource office in FY95.**

We are recommending the purchase of a LAN based imaging system in FY95. The imaging system will provide an efficient method of storing personnel file information for the Human Resource office. Since imaging is becoming a cost-effective system for document storage and access, the Human Resource office will serve as a pilot project for imaging at the institution. The estimated budget is \$90,000. Campus-wide implementation is limited until the campus-wide cabling system is completed.

- **Provide LAN-based office system in FY95.**

We recommend the development/acquisition of a standardized office system that can be used campus-wide. The system should provide electronic mail, calendaring, scheduling, bulletin boards, and databases. The estimated budget is \$30,000. This project is dependent on a campus-wide cabling system.

- **Provide access to information for faculty and staff.**

Continue to acquire products and services to provide faculty and staff easy access to necessary information to perform their job functions. This includes access to the databases on the mainframe and local area networks and to allow downloading of information to users' personal computers. This recommendation cannot be completed until the campus-wide cabling system is complete.

- **Decentralization of Administrative applications.**

We are recommending moving in a direction to decentralize administrative applications from the mainframe to LAN based systems where appropriate. This approach will reduce costs and allow easier campus-wide access to information while supporting the applications of the future.

- **Encourage use of reporting tools.**

Encourage use of end user reporting tools through services and training sessions to reduce staff support.

Support

The following recommendations will provide the computer support necessary on campus:

- **Provide a Programmer Analyst in FY93.**

A new Programmer Analyst position is needed to provide additional help to meet the increased programming needs of the user departments. This position is requested by FY93.

- **Provide LAN Coordinator position in FY93**

We are recommending a LAN Coordinator position to provide support for all the local area networks on campus. As we continue to add networks the need for additional support will be required.

- **Provide additional microcomputer maintenance position for user departments in FY94.**

Each year user departments continue to purchase microcomputers. In the last three years we have provided onsite service inhouse to the user departments. In order to continue to provide an adequate level of service we are recommending a full-time Micro Technician be added in FY94.

- **Provide additional PC training and consulting support in FY95.**

We are recommending an additional Information Center Analyst in FY95 to meet the continuing need for user department support for microcomputers.

- **Develop program/user workshops on computing.**

Develop program/user workshops on computing as to what is happening today, how computing can be used effectively in a given department. Many current and potential computer users are not aware of what is available. Regular seminars will help eliminate this information gap and allow users to ask the right questions.

- **Incorporate computers into simple activities.**

Incorporate computers into simple activities. Activities that should be promoted include wide use of electronic mail for simple messages, calendaring facilities, and administrative schedules.

- **Use the computers that currently exist on campus to improve productivity.**

Effectively utilize computers into daily activities. Such activities should include downloading data from the mainframe system into microcomputers for analysis and reporting, effective and wider use of word processing, and incorporating graphics for reporting and presentation.

Financial Considerations

The following figure provides a breakdown of the computing costs for Administrative Computing by fiscal year. The capital amounts are one-time funds. The operating budget shows the ongoing cost of supporting the capital equipment and software.

ADMINISTRATIVE COMPUTING						
<u>Item</u>	<u>FY93</u>		<u>FY94</u>		<u>FY95</u>	
	<u>Budget</u>	<u>Estimate</u>	<u>Budget</u>	<u>Estimate</u>	<u>Budget</u>	<u>Estimate</u>
	<u>Capital</u>	<u>Operating</u>	<u>Capital</u>	<u>Operating</u>	<u>Capital</u>	<u>Operating</u>
<i>Administrative Systems</i>						
Library System						
Terminals/Ports-(3)	\$9,000	\$900	9,000	900		
Terminals/Ports-(5)					\$15,000	\$1,500
CPU Expansion					50,000	5,000
Printing	4,000	400				
Touch-Tone Expansion			30,000	900		
Imaging System-Human Resources					90,000	9,000
Facility Scheduling System	50,000	5,000				
Student Tracking System	20,000					
Campus Information System			20,000	600	20,000	600
LAN Based Office System					30,000	1,000
New Employee Setup	10,000	300	10,000	300	10,000	300
<i>Total-Administrative*</i>	<u>\$93,000</u>	<u>\$6,600</u>	<u>\$69,000</u>	<u>\$2,700</u>	<u>\$215,000</u>	<u>\$12,400</u>
*Staffing support not included in total.						

Figure 61. Administrative Computing Budget Summarized

The total requested amount for administrative computing is \$377,000 for FY93-FY95. This is \$93,000 for FY93, \$69,000 for FY94 and \$215,000 for FY95. The operating budget will need to increase by \$6,600 in FY93, \$2,700 in FY94 and \$12,400 in FY95 to provide the continuing support for the equipment and software.

Central Computing & Communications

Summary Recommendations

The following section provides a summary of the recommendations for Central Computing and Communications. The section is divided into system software, operations, hardware and communications recommendations.

Software

The following recommendations provide a direction for mainframe operating system software:

- **Upgrade the VM/ESA, VSE/ESA, and MUSIC operating systems.**

The operating system environment of VM/ESA, VSE/ESA and MUSIC should be upgraded to meet the future system requirements. This will require VM/ESA release 1.0 to be upgraded to VM/ESA release 1.1. The VSE/ESA and MUSIC systems should be upgraded to the most current versions as they are announced. Each of these upgrades will require additional resources. Please refer to hardware needs for additional costs relating to disk space.

Operations

The operations needs of Computing and Information Systems include those items relating to the space requirements for staffing support, computer room space for the placement of the additional computer equipment, storage of computer equipment and filing, and the staffing for computer operations for the central facility.

- **Expand hours of computer operations in FY93.**

In FY93, expand the part-time computer operator position to full-time operator or add one part-time operator to allow for the flexibility of peak periods of production and computer operator coverage at a cost of \$10,000 per year.

- **Provide additional space for Computing and Information Systems in FY93 and FY95.**

Additional office space will be needed for the Computing and Information Systems staff recommendations in FY93-FY95.

Hardware

The following recommendations will provide the necessary hardware to support the predicted application growth:

- **Expand solid state disk unit in FY93.**

We are recommending adding additional memory to the solid state disk unit to maintain less than one second response time on the mainframe for user applications. The estimated budget is \$15,000.

- **Expand and upgrade disk space to support future and current applications in FY93, FY94 and FY95.**

Provide additional disk space for the data growth identified by the software systems. Two IBM 3880 disk drives will be needed in each fiscal year for an estimated budget of \$11,200 in FY93, \$20,000 in FY94 and \$10,000 in FY95.

- **Expand disk control units and channels for expanded disk space requirements in FY93 and FY95.**

We are recommending the purchase of one additional IBM 3990 disk control unit in FY93 to support the additional disk drives mentioned above. This unit will cost \$35,000. Two IBM 3990 disk control units and eight channels are also being recommended to position us for replacing the disk drives in FY95. We are estimating the control unit at \$40,000 and the channels at \$50,000 in FY95.

- Tape Drives

Currently our magnetic tape backups are performed on six IBM 3480 cartridge drives. The time spent per job could be reduced by adding the tape compression feature to the cartridge system.

- **Upgrade the current IBM 3480 cartridge system controller and tape drives in FY95.**

We are recommending upgrading the 3480 cartridge system controller to add the data compression feature which would decrease system production time. The feature will cost \$15,000 in FY95

- Communications and Networking

Communications and networking provides the highways to connect the user terminals and personal computers to access information from the various administrative systems. Without the connectivity users have no access to information. There are many users, i.e. faculty and staff, that currently do not have access to information systems on campus. The following recommendations provide a direction for integrating computer systems on campus and identify the hardware necessary to access the campus-wide information systems.

- **Expand dialup access in FY93.**

Expand the IBM 7171 from forty-eight to sixty-four ports to provide regional center dial-up access to the mainframe computer systems. The estimated cost is \$10,000.

- **Provide access to a state-wide network in FY93.**

The state of Illinois is setting up a state-wide network to allow colleges, universities, primary and secondary schools, libraries and businesses to communicate. We are recommending connecting the college to the state-wide network at an estimated cost of \$10,000.

- **Expand terminal access in FY93 and FY94.**

Provide two 3174 controllers, one in FY93 and one in FY94 to provide sixty-four additional ports for end user terminals and microcomputers. The two controllers are budgeted at \$5,000 each.

- **Provide a campus-wide cabling system.**

A telecommunication committee has developed a report on the college's telecommunication needs. The plan for telecommunications connects central campus, open campus, and the regional centers to provide a telecommunications network that allows connectivity of computer systems and the continuing support of the system. The proposal provides a cabling system that would support voice, video, and data. This will support such applications as computer data systems, telephone systems, interactive video, security video, energy management, card security system, etc. The telecommunication plan provides funding to connect the various systems and local area networks on campus. We recommend moving ahead with the project as soon as possible. There are several recommendations in the plan that are dependent on the campus-wide cabling system.

Financial Considerations

The following figure provides a breakdown of computing costs for Central Computing by fiscal year. The capital amounts are one-time funds. The operating budget is the ongoing cost of supporting the equipment and software.

CENTRAL COMPUTING & COMMUNICATIONS						
Item	FY93		FY94		FY95	
	Budget Estimate Capital	Operating	Budget Estimate Capital	Operating	Budget Estimate Capital	Operating
Hardware						
Disk Controllers	35,000	4,800			40,000	9,600
Disk Space	11,000	6,000	10,000	6,000	20,000	6,000
Mainframe Channels					50,000	1,000
Terminal Controllers	5,000	300	5,000	300		
Tape Compression					15,000	1,500
Dialup Expansion	10,000	300				
Solid State Expansion	15,000	500				
State Network		10,000				
Total-Central*	\$76,000	\$21,900	\$15,000	\$6,300	\$105,000	\$18,100

*Staffing support not included in total.

Figure 62. Central Computing Budget Summarized

The total capital amount requested for Central Computing is \$171,000 for FY93-FY95. This is \$76,000 for FY93, \$15,000 for FY94 and \$105,00 for FY95. The operating budget will need to increase by \$11,100 in FY93, \$6,300 in FY94, and \$18,100 in FY95 to provide the necessary support for the hardware and software.

Support Summary

In the plan we have requested several additional positions to provide the level of support we feel we need in computing. Many of the positions deal directly with training the user "how to" while providing the continued consulting support of hardware and software. The following figure shows the current staffing levels with the additional positions requested and where the positions are needed for FY93 through FY95.

COMPUTING AND INFORMATION SYSTEMS ESTIMATED STAFFING LEVEL REQUEST				
Department/New Position	Current	Requested Positions		
	FY92	FY93	FY94	FY95
Office of Director	3	0	0	0
Distributed Computing	14.5	0	0	0
Senior Academic Analyst		1	0	1
Lab Supervisor-Pt		.5	0	0
Microcomputer Technician II		0	1	0
Information Center Analyst		0	0	1
LAN Coordinator		1	0	0
Mainframe Computing	10	0	0	0
Programmer Analyst		1	0	0
Communications, Systems, & Operations	11.5	0	0	0
Senior Network Analyst		0	1	1
Computer Operator-(PT to FT)		.5	0	0
Total No. of Positions	39	4	2	3

Figure 63. Computing and Information Systems Estimated Staffing Level Request

The following new positions are requested:

- **Lab Supervisor** will be responsible for supervising part-time lab employees in the Seaton Computing Center twenty hours per week. The position is requested in FY93 for the extended hours of operation for the Seaton Computing Center.
- **LAN Coordinator** will provide full-time support for local area networks on campus for FY93.
- **Programmer Analyst** position will provide additional help to meet the continuing programming needs of the user departments. This position is requested by FY93.
- **Computer Operator** position will allow Computer Operations to expand production hours by twenty additional hours per week. This position is requested in FY93.
- **Senior Academic Analyst** position in Academic Computing will provide microcomputer support to faculty. This position is requested in FY93 and FY95.
- **Microcomputer Technician II** position will provide full-time support for the repair of microcomputers at the institution. We are requesting the position in FY94.
- **Senior Network Analyst** would provide technical support for the various local area networks and data communication systems on campus for FY94 and one in FY95.
- **Information Center Analyst** will provide support for decision support tools, microcomputers, and end user applications for FY95.

We are requesting four additional positions in FY93, two positions in FY94 and three positions in FY95.

INSTITUTIONAL FINANCIAL CONSIDERATIONS

Summary of Financial Costs

The total requested funds for capital expenditures for FY93 to FY95 is \$1,440,500. In order to provide an adequate level of maintenance to support the capital expenditures, the operating budget will need to increase by \$69,495 in FY93, \$29,110 in FY94 and \$35,720 in FY95. The staff support needs for these items are not included in the operational budget but will be requested in the normal staffing request process. The following figure shows a summary of the financial considerations for academic, administrative, and central computing.

<u>Item</u>	<i>SUMMARY OF COSTS</i>					
	<i>FY93</i>		<i>FY94</i>		<i>FY95</i>	
	<u>Budget</u>	<u>Estimate</u>	<u>Budget</u>	<u>Estimate</u>	<u>Budget</u>	<u>Estimate</u>
	<u>Capital</u>	<u>Operating</u>	<u>Capital</u>	<u>Operating</u>	<u>Capital</u>	<u>Operating</u>
Academic Computing	\$366,500	\$40,995	\$337,000	\$20,110	\$164,000	\$5,220
Administrative Computing	93,000	6,600	69,000	2,700	215,000	12,400
Central Computing	76,000	21,900	15,000	6,300	105,000	18,100
Total	\$535,500	\$69,495	\$421,000	\$29,110	\$484,000	\$35,720

Figure 64. Summary of Costs

Financial Plan

A financial plan is one of the most important components of a planning effort. Diligent and careful financial planning is important to reduce costs and save money for the institution. This section defines the spending levels for computing over the last four years FY89 - FY91; provides budget estimates for FY92 - FY93; describes the effects of computing on the unit cost per student; and identifies the funding sources to meet the estimated computing expenditures for FY93 - FY95.

Actual Expenditures/Estimated Budgets

The following table shows a comparison of Computing and Information Systems actual expenditures for fiscal years 89, 90, 91; the current budget for FY92; and the estimated budget for FY93, which is the first year of the computing plan. The table includes both expenditures and budgets from Computing and Information Systems operating account 1900 and the current long range computer account 6823.

**COMPUTING AND INFORMATION
ACTUAL EXPENDITURES/ESTIMATED BUDGET
FY89 - FY93**

	<u>Actual Expenditures</u>			<u>Estimated Budget</u>	
	<u>FY89</u>	<u>FY90</u>	<u>FY91</u>	<u>FY92</u>	<u>FY93</u>
Salaries*	\$1,090,310	\$1,175,157	\$1,356,725	\$1,612,788	\$1,709,555
Fringe Benefits	100,615	125,157	165,659	169,602	179,778
Contractual Services	562,384	453,088	604,824	614,960	699,137
Supplies	147,759	153,892	193,442	215,616	226,396
Conference & Meeting	28,893	25,494	29,033	32,836	32,836
Fixed Charges	356,723	219,304	161,827	261,979	275,077
Telephone	12,000	26,759	38,202	30,000	40,000
Other	21,282	8,170	23,425	14,992	16,000
Subtotal	<u>\$2,319,966</u>	<u>\$2,187,021</u>	<u>\$2,573,137</u>	<u>\$2,952,773</u>	<u>\$3,178,779</u>
Capital Outlay	830,700	1,763,420	947,506	1,029,000	535,500
Total	<u><u>\$3,150,666</u></u>	<u><u>\$3,950,441</u></u>	<u><u>\$3,520,643</u></u>	<u><u>\$3,981,773</u></u>	<u><u>\$3,714,279</u></u>

* Does not include new positions

Figure 65. Actual Expenditures/Estimated Budget FY89 - FY93

The level of expenditures is expected to decrease by 6.7 percent or -\$267,494 in the total budget from FY92 to FY93.

Funding for the Institutional Plan for Computing

The following figure shows the distribution of funds over the next three years in order to fund the recommended capital and operating expenditures identified in the plan.

**FUNDING
INSTITUTIONAL PLAN FOR COMPUTING
FY92 - FY95**

<u>Description</u>	<u>Fiscal Year</u>			
	<u>FY92</u>	<u>FY93</u>	<u>FY94</u>	<u>FY95</u>
Source of Funds				
Beginning Balance	\$ 419,813	\$ 30,313	\$ -9,232	\$ 105,208
Transfer Funds	595,000	550,000	550,000	400,000
Transfer Funds - Interest	29,500	15,000	15,000	20,000
Total Funds Available	<u>\$1,044,313</u>	<u>\$ 595,313</u>	<u>\$ 555,318</u>	<u>\$ 525,208</u>
Expenditures				
Capital	\$1,014,000	\$ 535,500	\$ 421,000	\$ 484,000
Operating	0	69,495	29,110	35,720
Total Expenditures	<u>\$1,014,000</u>	<u>\$ 604,995</u>	<u>\$ 450,110</u>	<u>\$ 519,720</u>
Balance Forward	<u>\$ 30,313</u>	<u>\$ -9,682</u>	<u>\$ 105,208</u>	<u>\$ 5,488</u>

Figure 66. Funding

The funding table is divided into source of funds and expenditures. The source of funds defines the balance in the long range computer account and transfers that have been planned in the institutional financial plan. The total funds available estimates the amount of money available each year based on the estimated expenditures.

The expenditures identified are the capital and operating costs identified each year in the computing plan. The balance forward is the difference between funds available and total expenditures. The balance forward from one year is the beginning balance in the next year. The table shows an ending balance in FY95 of \$5,488 assuming all items recommended in the plan are purchased at the budgeted amounts.

Funding Sources

As of FY95 no additional funds will be needed to fund the items recommended in the plan. In FY96 we are projecting the need for 400 to 500 additional workstations to support student and faculty growth in the use of computers. We are estimating the computer equipment and software budget to be \$2,500,000. There are several alternatives that can be used to generate the additional funds.

- **Computing Fee**

Currently lab fees are charged to Computing and Information Systems and CADD courses only. With the non-traditional courses using computers in the classroom, a more equitable method should be developed to charge equally for all students using computing on campus.

Over the last four years we have reviewed various fee structures to charge for the use of computers on campus. The options reviewed were computing fee based on usage, flat fee for all courses using computers, a flat fee for all courses, and a fee per each quarter hour for all students. Several labs on campus are not restricted to students using computers in their classes only, the recommended fee option is a fee per quarter hour for all credit courses. If we charge one dollar per credit hour we would generate adequate funds to provide the additional workstations needed to meet the students needs. If we started charging the fee in FY93 by FY96 we would generate \$763,290 in FY93, \$786,195 in FY94 and \$809,775 in FY95. With interest we would accumulate \$2,564,060 by FY96.

- **Educational Fund**

Funds that are available from the fund could be transferred to cover part of the funding needed.

- **Long Term Financing**

We have used long term financing over the last several years to provide funds for computing. If capital funds are not available, long term financing may be the approach we want to use for some of the funding. The current loan rates are very low.

- **Joint Partnerships**

Many colleges and universities have developed joint partnerships with corporations in providing hardware and software. Most of the joint partnerships require a commitment from the institution or people resources to assist in the development of software. Some joint partnerships require the institution to be a show place for the vendor product. The institution would provide seminars and tours on what is happening. This also requires people support from the institution. The savings from a partnership could provide a discount from 5 to 50 percent on the products.

- **Grants and Donations**

Grants and donations are other approaches that can be used to provide computer hardware and software. The college has successfully received grants to cover high technology

advancements. Donations can provide some hardware but most of the time the equipment donated is older technology which could require substantial funds to maintain.

Unit Cost Analysis

The following table shows a comparison of the unit cost analysis for Actual FY89 - FY91 and the projected unit cost for FY92 - FY95 based on the funding of the Institutional Plan for Computing. The table shows the actual student FTE's for FY89 - 91 and the budgeted FTE's through FY95. The unit cost is the total dollars spent per student FTE at the college for instructional and administrative computing.

UNIT COST ANALYSIS ACTUAL/PROJECTED FY89-95							
	<u>Actual</u>			<u>Budget</u>	<u>Institutional Plan For Computing</u>		
	<u>FY89</u>	<u>FY90</u>	<u>FY91</u>	<u>FY92</u>	<u>FY93</u>	<u>FY94</u>	<u>FY95</u>
Student FTE	13,927	15,063	15,811	16,468	17,127	17,812	18,524
College Unit Cost	\$98.95	\$101.90	\$110.62	\$120.00	\$127.00	\$135.00	\$143.00
Computing Unit Cost	7.54	9.17	7.85	8.40	7.62	7.83	7.58
Instructional	1.89	2.29	1.96	2.10	1.90	1.96	1.89
Administrative	6.02	6.88	5.89	6.30	5.72	5.87	5.69
Percentage of Computing/ College Unit Cost	7.6%	9.0%	7.1%	7.1%	6.0%	5.8%	5.3%

Figure 67. Unit Cost Analysis Actual/Projected FY89 - 95

The college unit cost for FY92 is \$120.00 per student semester credit hour. The unit cost for computing in FY92 is \$8.40. This is divided into \$2.10 for Instructional Computing, and \$6.30 for Administrative Computing. The unit cost for computing will change each year to \$7.62 in FY93, \$7.83 in FY94, and \$7.58 in FY95.

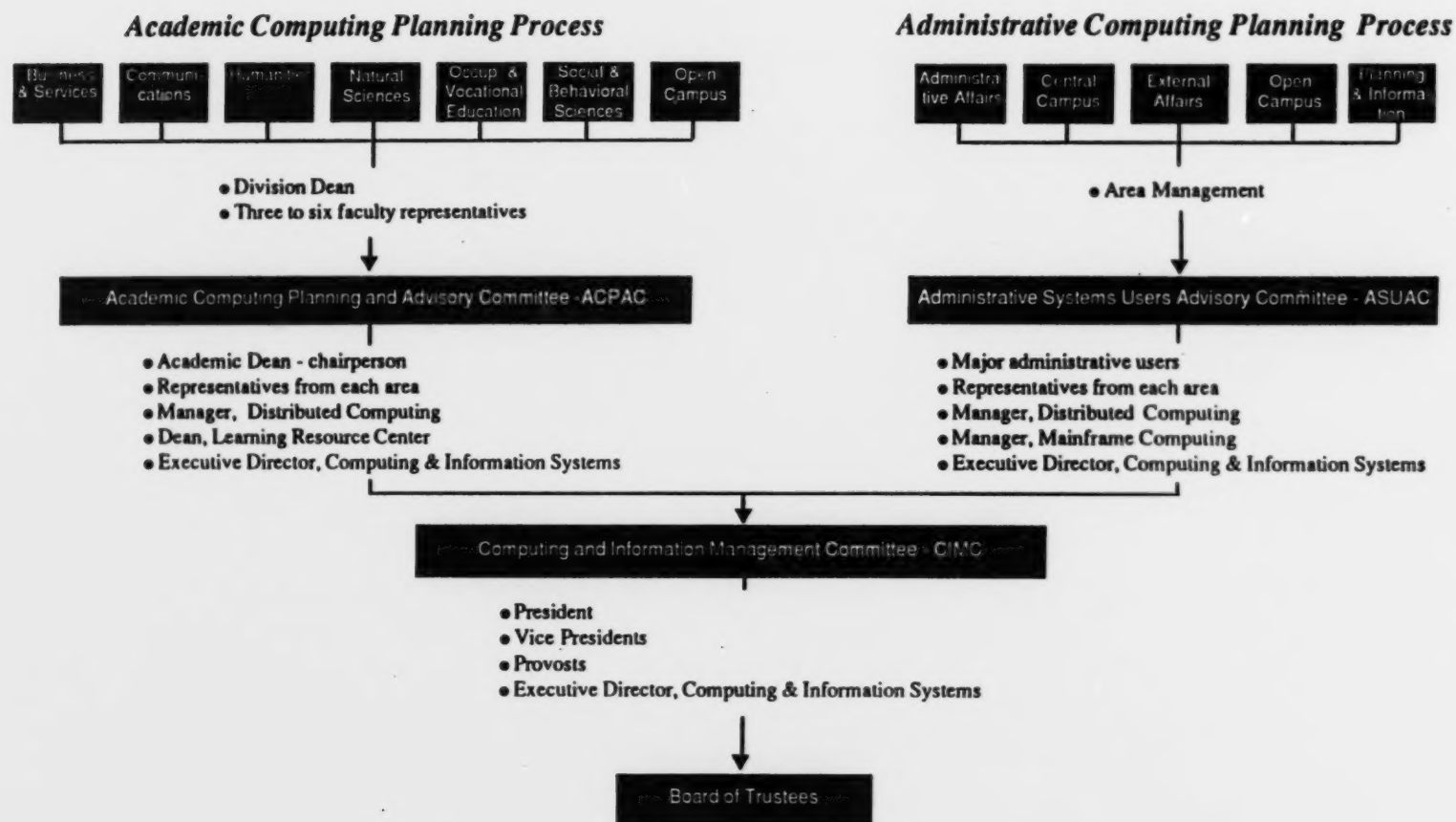
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Appendix A. COMPUTING PLANNING PROCESS

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COMPUTING PLANNING PROCESS



February 7, 1992

Appendix B. ACADEMIC COMPUTING SURVEY

The following pages contain the Academic Computing Survey used to gather faculty input to the academic portion of the plan for computing.

ACADEMIC COMPUTING SURVEY FACULTY INPUT TO THE ACADEMIC COMPUTING PLAN

Name

Area of Instruction

Name of Department/Division

HARDWARE

- I. List from highest to lowest priority where you would like to see an increase in computer hardware

Enter a number from 1 through 11 with 1 being the highest Priority and 11 the lowest priority.

Enter a number from 1 through 8 with 1 being the highest priority and 8 the lowest priority.

☐ Plato Terminals
☐ IBM 4381 Terminals
☐ HP 3000 Terminals
☐ Wang Terminals
☐ Tektronix Terminals
☐ IBM PC Lab Microcomputers
☐ Apple IIe Lab Microcomputers
☐ TRS 80 Lab Microcomputers
☐ UNIX C Lab Stations
☐ Victor 9000 Microcomputers
☐ Other (please specify) _____

☐ Hard Disk Storage
☐ Floppy Disk Drives
☐ Dot-Matrix Printers
☐ Letter Quality Printers
☐ Modems/Communications
☐ Dial-up to IBM 4381
☐ Local Area Network of Micros
☐ Other (please specify) _____

- II. List your priority for those areas where you would like to see an increase in number of computer stations. Enter a number from 1 through 6 with 1 being the highest priority and 6 the lowest priority

☐ Computer labs (All Micro's, Mini's, Mainframe, Plato).

☐ Microcomputers located in faculty office areas.
☐ Microcomputers located in centralized area for faculty use.
☐ Portable microcomputer projection system for classroom use.
☐ Fixed microcomputer projection system for classroom use.
☐ Other (please specify) _____

- III. If your computer needs are not met by the computer types listed above, but instead require equipment which is highly specific to a computer application that you need to use, please describe the hardware below.

SOFTWARE

- I. List your priority for those computer applications which are most important to you. Enter a number from 1 through 13 with 1 being the highest priority and 13 the lowest priority.

☐ Word Processing
☐ Plato-Computer Assisted Instruction
☐ Micro-Computer Assisted Instruction
☐ Micro-Class Management Software
☐ Micro-Database (i.e. PFS File, DB III)
☐ Micro/Mainframe-Graphics, Computer Aided Design
☐ Integrated Software (i.e. Framework, Apple Works, Symphony)
☐ Authoring Languages (used to create CAI programs without using Basic or Pascal)
☐ Statistical Programs
☐ IBM 4381 Languages/Tools
☐ IBM 4381 Database-Fourth Generation Language
☐ Communications Programs (Micro to Mainframe)
☐ Other (please specify) _____

- II. How would you rate your ability to obtain monies to purchase software? Please check one of the following choices.

☐ Excellent ☐ Good ☐ Adequate ☐ Poor ☐ Not Applicable

- III. How would you rate your ability to identify and use software already purchased by the college? Please check one of the following choices.

☐ Excellent ☐ Good ☐ Adequate ☐ Poor ☐ Not Applicable

- IV. How would you rate your ability to identify and use software not yet purchased by the college but available on the market.

☐ Excellent ☐ Good ☐ Adequate ☐ Poor ☐ Not Applicable

SUPPORT IN USE OF COMPUTERS

- I. Please circle the level of support you feel you need to help you make use of computers.

Level of Support

	High	Moderate	Low	None	Does Not Apply
A. Computer training	A	B	C	D	E
B. Information on what is available at the college and how to use it.	A	B	C	D	E
C. Personal consulting on the use of hardware or software	A	B	C	D	E
D. Identification of new applications or evaluation of software	A	B	C	D	E
E. Integration of software into instruction	A	B	C	D	E
F. Written instruction on how to use software or hardware.	A	B	C	D	E

G. Demonstration of purchased software.	A	B	C	D	E
H. Installation and repair of microcomputers	A	B	C	D	E
I. Computer Programming in the development of instructional programs.	A	B	C	D	E
J. Student support in the use of a computer lab facility.	A	B	C	D	E

LEVEL OF SERVICE

I. Please circle the level of support you feel you are receiving.

	Level of Support				
	Exceed	Meet	Below	Unaccept	No Opinion
A. Is prompt in complying with requests.	A	B	C	D	E
B. Is courteous and polite.	A	B	C	D	E
C. Is cooperative and helpful in solving problems/offering suggestions.	A	B	C	D	E
D. Is open to new ideas.	A	B	C	D	E
E. Tries to understand my needs.	A	B	C	D	E
F. Is well organized/efficient.	A	B	C	D	E
G. Is open to constructive criticism.	A	B	C	D	E
H. Is creative/original	A	B	C	D	E
I. Adjusts to change in service requests and deadlines.	A	B	C	D	E
J. Communicates available services.	A	B	C	D	E
K. Consistently produces desired results.	A	B	C	D	E
L. Demonstrates through knowledge of job duties/skills/procedures.	A	B	C	D	E
M. Consistently remains ahead of schedule and meets deadlines.	A	B	C	D	E
N. Makes fair, objective and consistent decisions.	A	B	C	D	E

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|--|---|---|---|---|---|
| O. Demonstrates a willingness and openness to learn from the experience of others. | A | B | C | D | E |
| P. Overall appraisal of services. | A | B | C | D | E |

II. If there was one area of concern that could be improved, what problem would it be?

III. Please provide any comments or suggestions on improvement of services.

RESOURCE ALLOCATION

- I. Assume you have been given responsibility to describe how computer resources are to be allocated at the college. You have been given a total of 1000 points which represents all of the resources that are available and must divide the points into categories listed below. You may allocate no points to any of the categories but do not exceed the total of 21000. Those categories you do not understand please leave blank.

Area	Number of Points Allocated
A. Word Processing - microcomputers	
B. Word Processing - mainframe	
C. Computer Graphics - microcomputers	
D. Computer Graphics - mainframe	
E. Statistical Software (i.e. SPSS, SAS)	
F. Language Compilers (PL/I, FORTRAN, COBOL, C)	
G. Computer-Aided Design (CAD/CAM)	
H. Computer-Aided Instruction (Plato)	
I. Computer-Managed Instruction (RSVP, Grading)	
J. Disk Data Set Security	
K. Account Security	
L. Micro-Mainframe File Transfer	
M. Full-Screen Access to Mainframe (MUSIC)	

- N. Additional Micro-Labs-Apple II _____
- O. Additional Micro-Labs-Radio Shack _____
- P. Additional Micro-Labs-IBM PC _____
- Q. Access to UNIX _____
- R. Timesharing Response Time _____
- S. Increased Documentation _____
- T. Improved Response to Problems _____
- U. Increased Consulting _____
- V. Microcomputer Support (Hardware, Software) _____
- W. Micro-Networking Capability _____
- X. Dial-up Access to the Mainframe _____
- Y. Computer Training _____
- Z. Other _____
- _____
- _____
- _____
- _____

Incentive To Use Computers

- I. It is realized that student use of computers can only increase through the effort of faculty in exploring new applications. Below are a number of ways we feel faculty will be encouraged to use computers. Please check off all items you feel are important and add additional incentives that will encourage your use of computers.

- _____ Faculty training workshops
- _____ Hardware or software grant to incorporate computer use in your classroom instruction.
- _____ Release time to explore, develop and incorporate computer use in your classroom instruction.
- _____ Other (please specify) _____
- _____
- _____
- _____

February 7, 1992

Appendix C. ADMINISTRATIVE COMPUTING DEPARTMENTAL SURVEY

The following pages contain the Administrative Computing Departmental Survey used to gather additional information about administrative computing needs at the college.

COLLEGE OF DUPAGE
INSTITUTIONAL PLAN FOR COMPUTING

ADMINISTRATIVE COMPUTING DEPARTMENTAL SURVEY

DEPARTMENT: _____ **DATE:** _____
INTERVIEWEE: _____ **INTERVIEWER:** _____

I. Terminals / Printers to Mainframe/Mini Computers

Please identify the number of additional terminals / printers that are needed to provide your department with an adequate level of support over the next three years.

No. Terminals	Type of Terminal (IBM 3191,3192)	Printers (IBM 3287,3812)	System Connection (IBM, Library)	Access to: (CDAS,CMS)	When (FY)
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Explanation of Use: _____

II. Microcomputers

Please identify the number of additional microcomputers that are needed to provide your department with an adequate level of support over the next three years. Specify if the micros are new or a replacement for existing systems.

No. Micros	New (N) Replacement (R)	Type IBM/MAC	Other (Printers, CD-ROM, Mainframe Access)	When (FY)
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

Explanation of Use: _____

III. Local Area Networks (LANS)

Please identify any local area network needs within your department. Specify the number of workstations, printers and/or any other computer devices needed. If you included any LANS in your capital request please include.

No. Micros	Type IBM/MAC	Other Devices	When (FY)
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Do you need to connect to other departmental LANS? _____ Where? _____

Explanation of Use: _____

IV. Current Computer Administrative Applications - Usage Projections

Below is a list of computer applications currently available on the mainframe. If your department is responsible for the system please project your percent increase in records; i.e., number of students, number of courses, number of transactions, for online use for the next three years. This also includes new information that is not currently stored on the system.

	Current No. of Records	% Projections-FY		
		1993	1994	1995
A. Financial System(CUFS)				
College	3,900,000	—	—	—
Foundation	167,000	—	—	—
Report Distribution	235,000	—	—	—
B. Capital Assets System (CDAS/CA)				
Inventory	27,300	—	—	—
C. Human Resource Systems				
No. of Employees	5,300	—	—	—
History Database	55,000	—	—	—
Employee Database	63,000	—	—	—
D. EZ-List (Mailing List System)				
Members	210,500	—	—	—
Lists	700	—	—	—
E. Student Financial Aid System (CDAS/FA)				
Master File - 8 years	91,700	—	—	—
F. Student Billing and Receivables(CDAS/BR)				
Subcodes	1,250	—	—	—
Master Detail File - 6 quarters	1,439,000	—	—	—
G. Student Records System (CDAS/SR)				

Class Roster - 32 quarters	1,633,000	—	—	—
Course Inventory	10,500	—	—	—
Course Term - 8 years	130,000	—	—	—
Student Term - 8 years	1,767,000	—	—	—
Student Key - 8 years	368,000	—	—	—
Student Key #2 - 5 years	181,000	—	—	—
Transcript Text	311,000	—	—	—
Faculty Assignment	10,100	—	—	—
Codes (Major/Pub Comment/Quarterly/Location)	3,800	—	—	—

II. DuPage Administrative (CDAS/AS)

Signons/Dictionary	2,000	—	—	—
--------------------	-------	---	---	---

I. Degree Audit System (CDAS/DE)	9,000	—	—	—
----------------------------------	-------	---	---	---

V. New Computer Application Projects

Please identify the computer applications or systems that are needed by your department that are currently not available. These will be rough estimates.

Applications	Description	No. of Records
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

VI. Support Projections

Please check all areas which you feel you need computing support.

- ☐ Computer Equipment Maintenance
☐ Consulting (Software and Hardware)
☐ Documentation
☐ Programming
☐ Training

Other - Explain: 237

VII. Future Computer Support Areas

Please check each area where your department would be interested in using the following new application(s).

- ☐ Graphics - computer generated charts and graphs
- ☐ Electronic mail - send messages and mail to staff (inter-office and intra-office communications)
- ☐ Word Processing - create, update, store, archival of document
- ☐ High quality text printing
- ☐ Report writing
- ☐ Statistical analysis
- ☐ Data management
- ☐ Project management
- ☐ Download PC data from mainframe
- ☐ Imaging - Direct input of source documents/view images online
- ☐ Local Area Network support and administration
- ☐ Other _____

VIII. Current and Future Connectivity Needs

Administrative Units

Please check each office area where you feel you will need to share or distribute information.

- ☐ Administrative Affairs
- ☐ Central Campus
- ☐ External Affairs
- ☐ Office of President
- ☐ Open Campus
- ☐ Planning and Information

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Geographic Locations

Please check each building location which you need to access, share, or distribute information.

- ☐ Arts Center
- ☐ DAVEA Regional Center
- ☐ Westmont Regional Center
- ☐ Glendale Heights
- ☐ Instructional Center
- ☐ Instructional Computing Center
- ☐ K Building
- ☐ Learning Resource Center
- ☐ M Building
- ☐ Naperville Regional Center
- ☐ Open Campus Center
- ☐ Physical Education Center
- ☐ Student Resource Center
- ☐ Other _____

Please identify any network or organization with which you desire to communicate to access, share, or distribute information:

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Appendix D. ACADEMIC COMPUTING DEPARTMENTAL SURVEY

The following pages contain the Academic Computing Departmental Survey used to gather information about academic computing needs at the college.

DATE: _____

INTERVIEWER: _____

For each of the instructional areas identify the course number, the number of contact hours the student will use computers in this course, the projected Fall 91 enrollment, the projected incremented increase in number of students above Fall 91 to Fall 92, Fall 92 to Fall 93 and Fall 93 to Fall 94. Also include the location (Room/Building) and percent usage of the computer lab and the type of computer used for each course. In the last column identify whether the lab time is for classroom lab or open lab hours. Use two lines if the students use both open and classroom lab time.

[illegible]

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II. Faculty Use of Computers

Please indicate the projected increase in the number of computer stations by type of computer that need to be purchased for faculty use over the next three years.

Total No. of Faculty	Number of Stations			Type of Computer
	FY93	FY94	FY95	
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

III. Software Budget

Please indicate the amount of money you have budgeted for software in FY91 and a projected percentage increase for the next three years.

Current Budget	% Projected Increase		
	FY93	FY94	FY95
\$ _____	____%	____%	____%

Are funds allocated for the preview of software? (Yes ____ No ____).

If yes, how much money? _____

What percent of the software budget do you estimate is allocated to buy software for student use? _____

IV. Department Computer Lab

Each department who maintains/supports a computer lab for their division/discipline needs to identify the following information. Please use a separate form for each lab.

A. Type of Lab - Check how the computer lab is used.

☐ Classroom Lab ☐ Open Lab ☐ Both

B. Description - Provide a description of how the lab is used. Identify the discipline/areas of instruction that use the lab.

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C. Management - Provide information on who manages the lab and the staffing.

Department	Staffing
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

D. Hours of Operation - Identify the hours the lab is available for student access.

Classroom Hours _____

Open Lab Hours _____

E. Software - Identify the software that is generally used in the facility for instruction.

Title	No. Copies	Description
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

F. Location	Type of Workstation/ Printers	No. of Workstations	Purchase Date	Estimated Replacement Date
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

G. Expansion - Identify any plans for expansion of the lab. Specify the types of equipment and identify the year the expansion is planned.

Equipment	Year	Funded	
		Yes	No
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

II. Do you plan to network the lab? _____ When _____

I. Do you need to connect to another computer lab on campus? _____ Where _____

J. Comments - Please provide any additional information about the lab.

V. Support Projections

Please list all areas which you feel you need computing support.

- _____ Computer Equipment Maintenance
- _____ Consulting (Software and/or hardware)
- _____ Documentation
- _____ Programming
- _____ Training

Other - Explain: _____

VI. New Academic Computer Applications

Please identify the academic applications or systems that you would like to see in use over the next three years.

Application Description - Attach Detail	Year of Use		
	FY93	FY94	FY95
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

VII. Future Computing Support Areas

Please check each area where your faculty will be interested in using the following applications.

- ☐ Graphics
- ☐ Electronic Mail
- ☐ Bulletin Boards
- ☐ Word Processing
- ☐ Multi-Media
- ☐ Access to Administrative Data
- ☐ Imaging
- ☐ Statistical Analysis

Appendix E. COMMITTEE MEMBERS

The following is a complete list of members from the computing committees; Academic Divisional Computing Committees, Academic Computing Planning and Advisory Committee, Administrative Systems Users Advisory Committee, and Computing and Information Management Committee.

Academic Divisional Computing Committees

<u>Representative</u>	<u>Title</u>	<u>Department/Discipline</u>	<u>Extension</u>
<i>Business and Services</i>			
Mike Drafke	Assoc. Professor	Business/Marketing/Management	2075
Julia Fitzpatrick-Cooper	Instructor	Ornamental Horticulture	2526
Bill Fox	Professor	Computer Information Systems	2198
Jack Kapoor	Professor	Business/Management/Marketing	2032
Ron Kapper	Professor	Office Careers	2188
Lori Mattas	Instructor	Travel & Tourism	2684
Rukshad Patel	Instructor	Accounting	3037
*Carol Scott-Chair.	Coordinator	Fashion Merchandise & Design	2058
<i>Communications</i>			
Jan Geesaman-Chair.	Asst. Prof.	English	2327
Dan Lindsey	Dean	Communications	2047
*Alice Snelgrove	Asst. Prof.	English	2749
Dan Thorpe	Asst. Prof.	English	2778
Frank Tourangeau	Assoc. Professor	Speech	2054
<i>Humanities</i>			
*Nancy Conradt	Asst. Professor	English	2009
Lee Kesselman	Assoc. Professor	Choral Music	2552
Ed Kies	Dean	Humanities	2047
<i>Natural Sciences</i>			
Stuart Anderson-Chair.	Professor	Mathematics	2062
Marty Huske	Professor	Mathematics	2171
Bill Pehrson	Assoc. Professor	Physical Education	2479
Herb Schulz	Professor	Physics	2436
*Gerald Krusinski	Professor	Mathematics	2055
<i>Occupational & Vocational Education</i>			
David Colburn	Instructor	Health & Public Services	2579
Mary Dreher	Assoc. Professor	Health & Public Services	2569
Glenn Hansen	Asst. Professor	Technology	2495
Joanne Metler	Asst. Professor	Health & Public Services	3065
Frank Salvatini	Instructor	Health & Public Services	2043
John Sprague-Williams	Asst. Professor	Electro-Mechanical Tech.	2192
*Tom Robin-Chair.	Professor	Manufacturing Tech.	2030
<i>Open Campus</i>			
Joyce Abel	Assoc. Dean	North Regional Center	495-3010
*Joe Barillari	Director	Instructional Design	2490
Sue Ebert-Edwards	Program Manager	Business/Technology Center	2180
*Peter Klassen	Professor	Interdisciplinary & Sociology	2081
<i>Social & Behavioral Sciences</i>			
Jack Harkins	Professor	Sociology	2022
*Alan Lanning	Professor	Psychology	2028
Walter Packard	Dean	Social & Behavioral Sciences	2156
Dean Peterson-Chair.	Assoc. Professor	Sociology/Religious Studies	3036
Mario Reda	Professor	Sociology	2134
Pat Slocum	Asst. Professor	Psychology	3043

*ACPAC Representative

Academic Computer Planning and Advisory Committee

<u>Representative</u>	<u>Title</u>	<u>Department/Discipline</u>	<u>Extension</u>
<i>Business and Services</i>			
Carol Scott	Asst. Professor	Fashion Merchandise & Design	2058
* Vince Pelletier	Dean	Business & Services	2592/93
<i>Communications</i>			
Alice Snelgrove	Professor	English	2749
<i>Computing and Information Systems</i>			
**Ed Leninger	Manager	Distributed Computing	2781
**Gary E. Wenger	Executive Director	Computing & Info Systems	2470/71
<i>Humanities</i>			
Nancy Conradt	Professor	Humanities	3045
<i>Learning Resource Center</i>			
Nancy R. Thomas	Asst. Professor	Learning Resource Center	2383
<i>Natural Sciences</i>			
Gerald Krusinski	Professor	Mathematics	2055
<i>Occupational & Vocational Education</i>			
Tom Robin	Professor	Welding	2030
<i>Open Campus</i>			
Joe Barillari	Director	Instructional Design	2490
Peter Klassen	Professor	Interdisciplinary & Sociology	2081
<i>Social & Behavioral Sciences</i>			
Alan Lanning	Professor	Psychology	2028
* Chairperson			
**Ex officio			

Administrative Systems Users Advisory Committee

<u>Representative</u>	<u>Title</u>	<u>Division/Area</u>	<u>Extension</u>
<i>Academic Services</i>			
Bob Regner	Director	Student Financial Aid, Career, Planning & Placement and Judicial Officer	2213
<i>Administrative Affairs</i>			
Tom Ryan	Director & Controller	Financial Affairs	2219
<i>Central Campus</i>			
Walt Packard	Dean	Social & Behavioral Sciences	2156/57
<i>Computing and Information Systems</i>			
**Donna Berliner	Manager	Mainframe Computing	2475
**Ed Leninger	Manager	Distributed Computing	2781
* Gary E. Wenger	**Executive Director	Comp & Info Systems	2470
<i>External Affairs</i>			
Christine Porter	Coordinator	Campus and Community Events	2456
<i>Human Resources</i>			
Howard Owens	Director	Human Resources	2460
<i>Learning Resource Center</i>			
Bob Veihman	Associate Dean	Learning Resource Center	2659
<i>Open Campus</i>			
Joe Barillari	Director	Instructional Design	2490/91
<i>Planning and Information</i>			
Chuck Erickson	Director	Adms, Regist, and Records	2481
Harlan Schweer	Acting Director	Research and Planning	2335
* Chairperson			
**Ex officio			

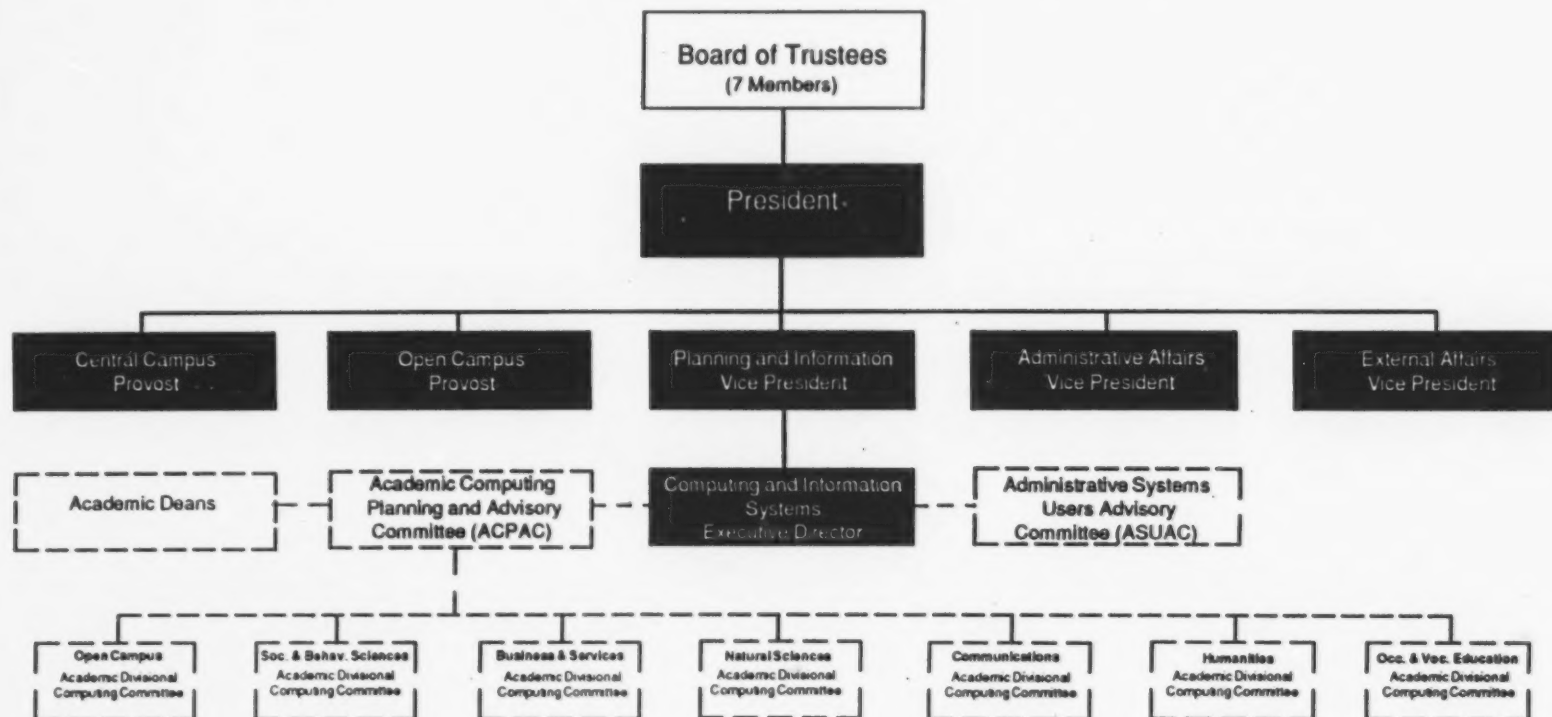
Computing and Information Management Committee

<u>Representative</u>	<u>Title</u>	<u>Department</u>	<u>Extension</u>
Ken Kolbet	Vice President	Administrative Affairs	2218
Ron Lemme	Vice President	Planning and Information	2285
Harold McAninch	President	College of DuPage	2202
Dick Petrizzo	Vice President	External Affairs	2265
Ted Tilton	Provost	Central Campus	2695
Carol Viola	Provost	Open Campus	2577
*Gary E. Wenger	Executive Director	Computing and Information Systems	2470

* Chairperson

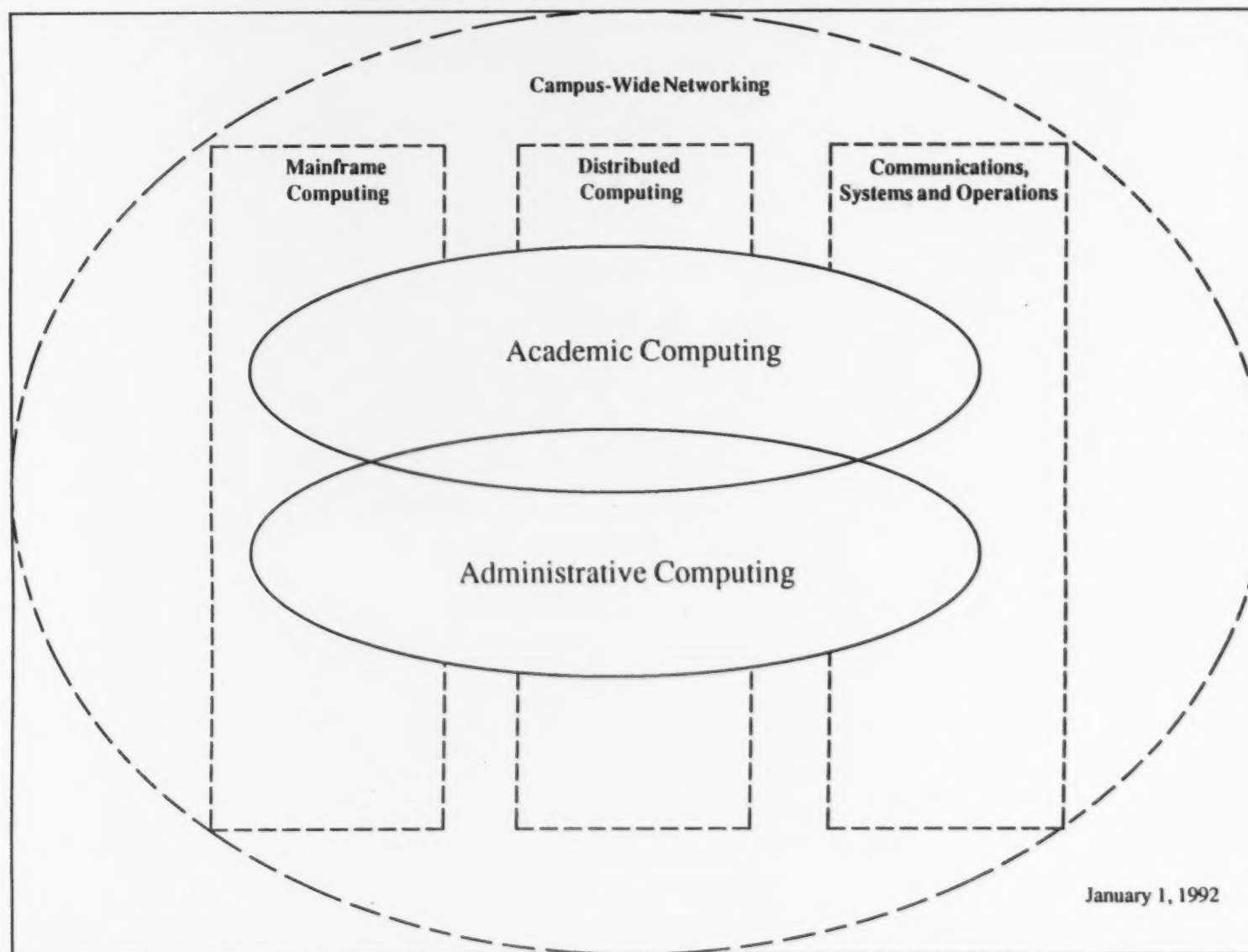
Appendix F. COMPUTING GOVERNANCE STRUCTURE

College of DuPage COMPUTING GOVERNANCE STRUCTURE

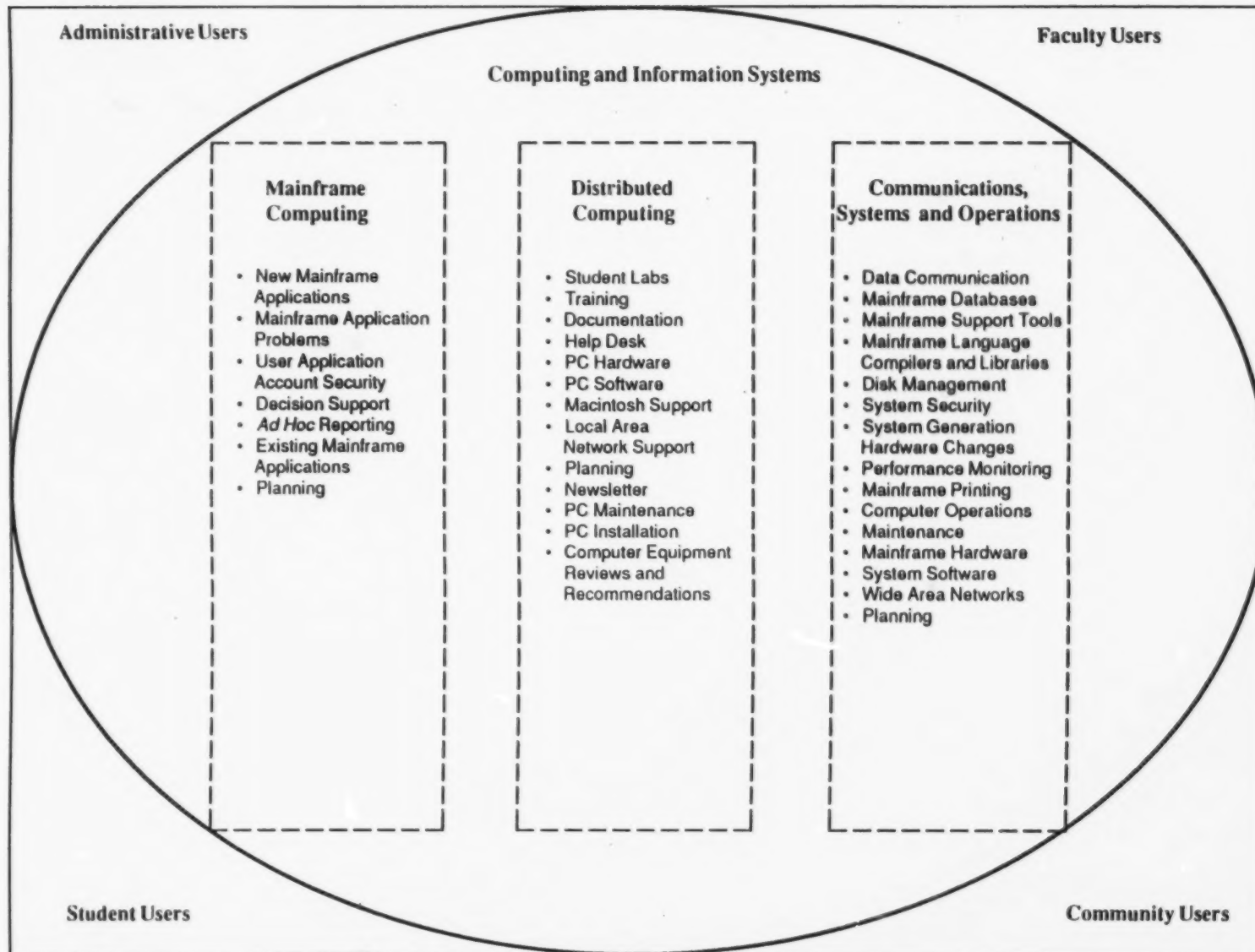


Appendix G. FUNCTIONAL ORGANIZATION CHART

Computing and Information Systems

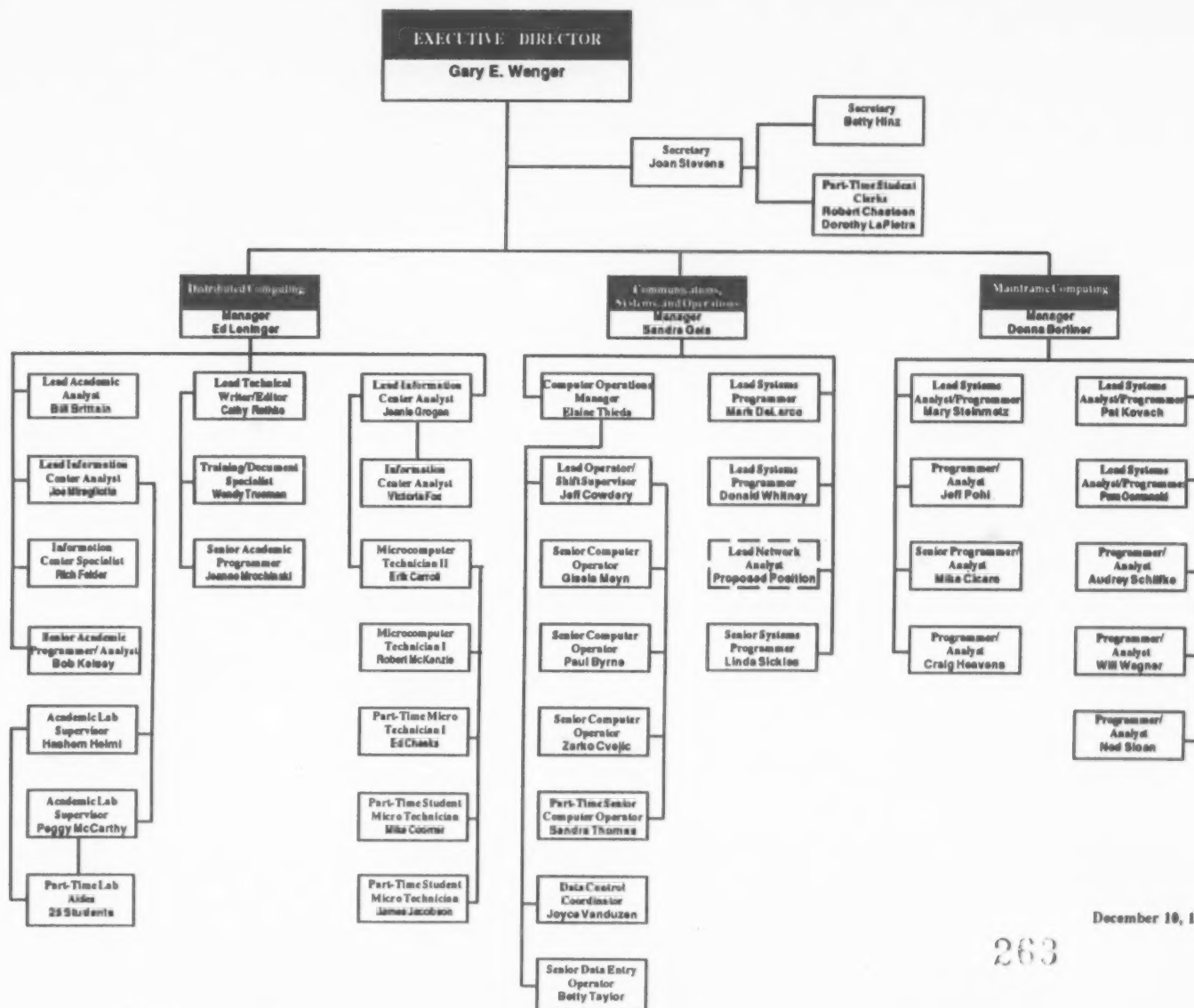


College of DuPage



Appendix H. COMPUTING AND INFORMATION SYSTEMS ORGANIZATIONAL CHART

College of DuPage COMPUTING AND INFORMATION SYSTEMS



December 10, 1991

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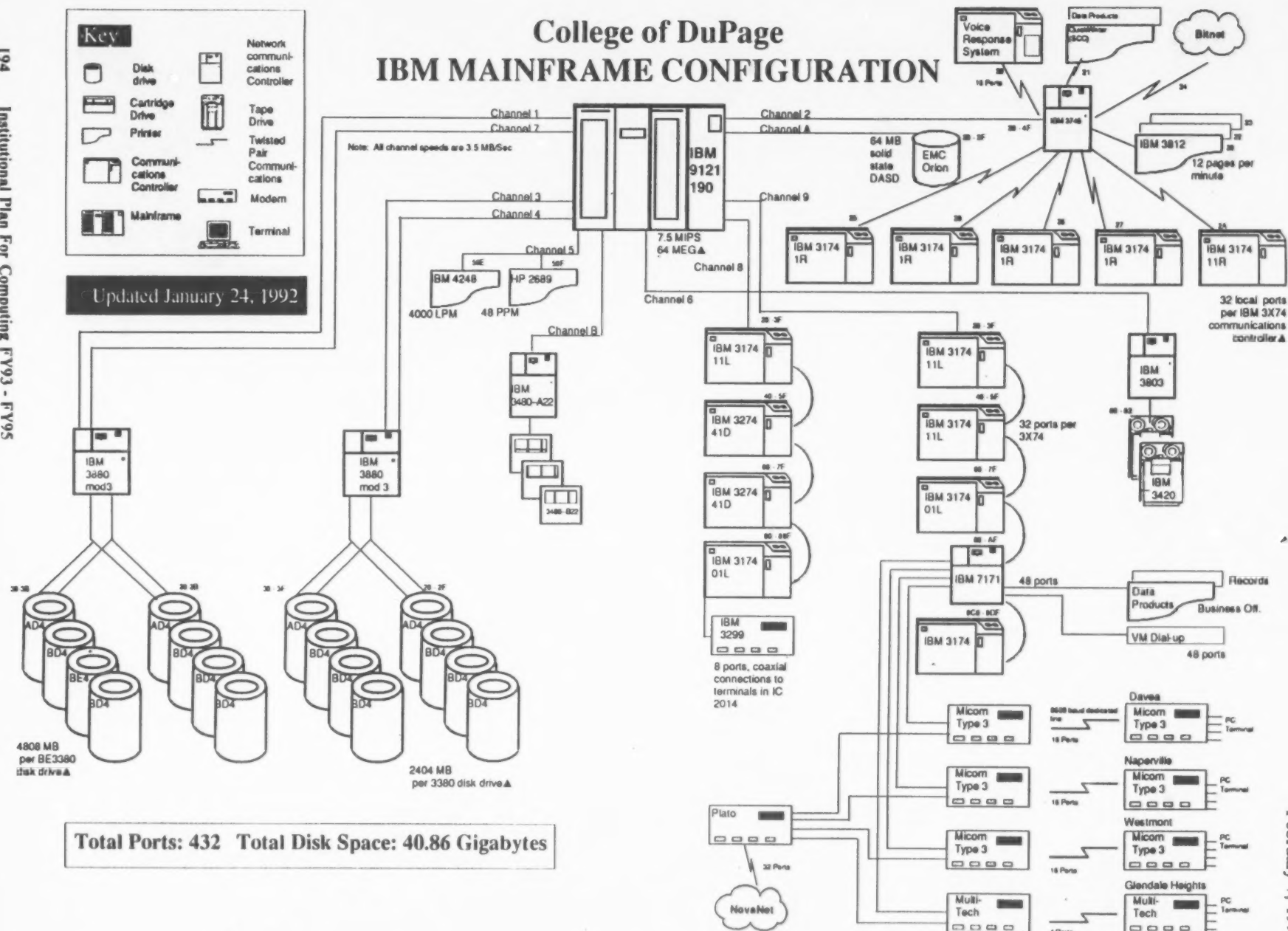
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February 7, 1992

Appendix I. IBM MAINFRAME CONFIGURATION

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College of DuPage IBM MAINFRAME CONFIGURATION



Appendix J. SOFTWARE CONFIGURATION

The following is a list of vendor software for the IBM mainframe. The list shows the operating system, vendor, product name, and version of release.

<u>VM/ESA</u>	IBM	ACF/NCP	Ver 5 Rel 3
	IBM	ACF/SSP	Ver 3 Rel 6
	IBM	AS	Ver 2 Rel 2
	IBM	Assembler H	Ver 2 Rel 1.0
	IBM	BookManager Read/VM	Rel 2
	IBM	C/370 Compiler	Ver 2 Rel 1
	IBM	C/370 Library	Ver 2 Rel 1
	IBM	CMS RE Compiler	Rel 1 Mod 0
	IBM	DCF	Rel 3 Mod 2
	IBM	DIRMAINT	Rel 4 Mod 0
	IBM	DITTO	Ver 3 Rel 2
	IBM	DSF	Rel 13 Mod 0
	IBM	EP for VM	Rel 7 Mod 0
	IBM	EREP	Ver 3 Rel 4.2
	IBM	GDDM	Ver 2 Rel 3
	IBM	ISPF	Ver 3 Rel 2
	IBM	OS PL/I	Ver 2 Rel 3
	IBM	PC File Transfer	Rel 1 Mod 0
	IBM	PL/I Transient Library	Ver 1 Rel 5 Mod 1
	IBM	RSCS	Ver 3 Rel 1
	IBM	Sonoran Serif	Rel 1 Mod 2
	IBM	SQL/DS	Ver 3 Rel 2
	IBM	VM3812 Software	Rel 1 Mod 3
	IBM	VM/ESA	Rel 1 Mod 0
	IBM	VMPRF	Rel 2 Mod 0
	IBM	VSE/VSAM for VM	Ver 2 Rel 1
	IBM	VTAM	Ver 3 Rel 3
Category	Vendor	Product Name	Version/Release/Modification
	Candle Corporation	Omegamon/VM	Ver 500
	Computer Associates	DYNAM/T	Rel 2.2(9110)
	Computer Associates	DYNAM/B	Rel 2.2(9110)
	Information Builders	FOCUS	Rel 6.5
	Macro4	TUBES	Rel 1.9.20C
MUSIC	Pansophic	VMLIB	Rel 3.1.A
	IBM	MUSIC/SP	Ver 2 Rel 2 Mod 0
	IBM	OS/VS Cobol Compiler	Rel 2 Mod 4
	IBM	OS FORTRAN IV	Rel 4 Mod 1
	IBM	OS FORTRAN IV Mod II	Rel 4 Mod 1
	IBM	MVS PC File Transfer	Rel 1 Mod 0
VSE/SP	IBM	VS FORTRAN	Ver 1 Rel 4 Mod 1
	IBM	CICS/DOS/VS	Ver 1 Rel 6 Mod 0
	IBM	DITTO	Rel 3 Mod 0
	IBM	DOS/VS Cobol Compiler	Rel 2 Mod 4
	IBM	DOS/VS PL/I Optimizing	Ver 1 Rel 6 Mod 0
	IBM	DOS/VS PL/I Compiler	Ver 1 Rel 3 Mod 0
	IBM	DOS/VS RPGII	
	IBM	DOS/VS Sort/Merge	Ver 2 Rel 5 Mod 0
	IBM	VSE/Advanced Functions	Ver 2 Rel 1 Mod 3
	IBM	VSE/EREP	Ver 3 Rel 1
	IBM	VSE/Operator	Ver 1 Rel 2 Mod 0
	IBM	VSE/POWER	Ver 2 Rel 2
	IBM	VSE/SP	Ver 2 Rel 1 Mod 3
	IBM	VSE/VSAM	Ver 1 Rel 3 Mod 0
	IBM	VS Fortran	Ver 1 Rel 4 Mod 1
	AMS	CUFS	Rel 5.0
	Candle Corp.	Omegamon/CICS/ & Epilog	Rel 240
	Computer Associates	DYNAM/T	Rel 5.5(9110)
	Computer Associates	JARS	Rel 5.0
	Computer Associates	Top Secret	Rel 2.2(9110)
	ISI	Payroll/Personnel System	Rel 9.2.5
	Macro4	VSAMTUNE	Rel 2.105

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Pansophic
Pansophic
SPSS

Panvalet Online
PANBATCH
SPSS/X

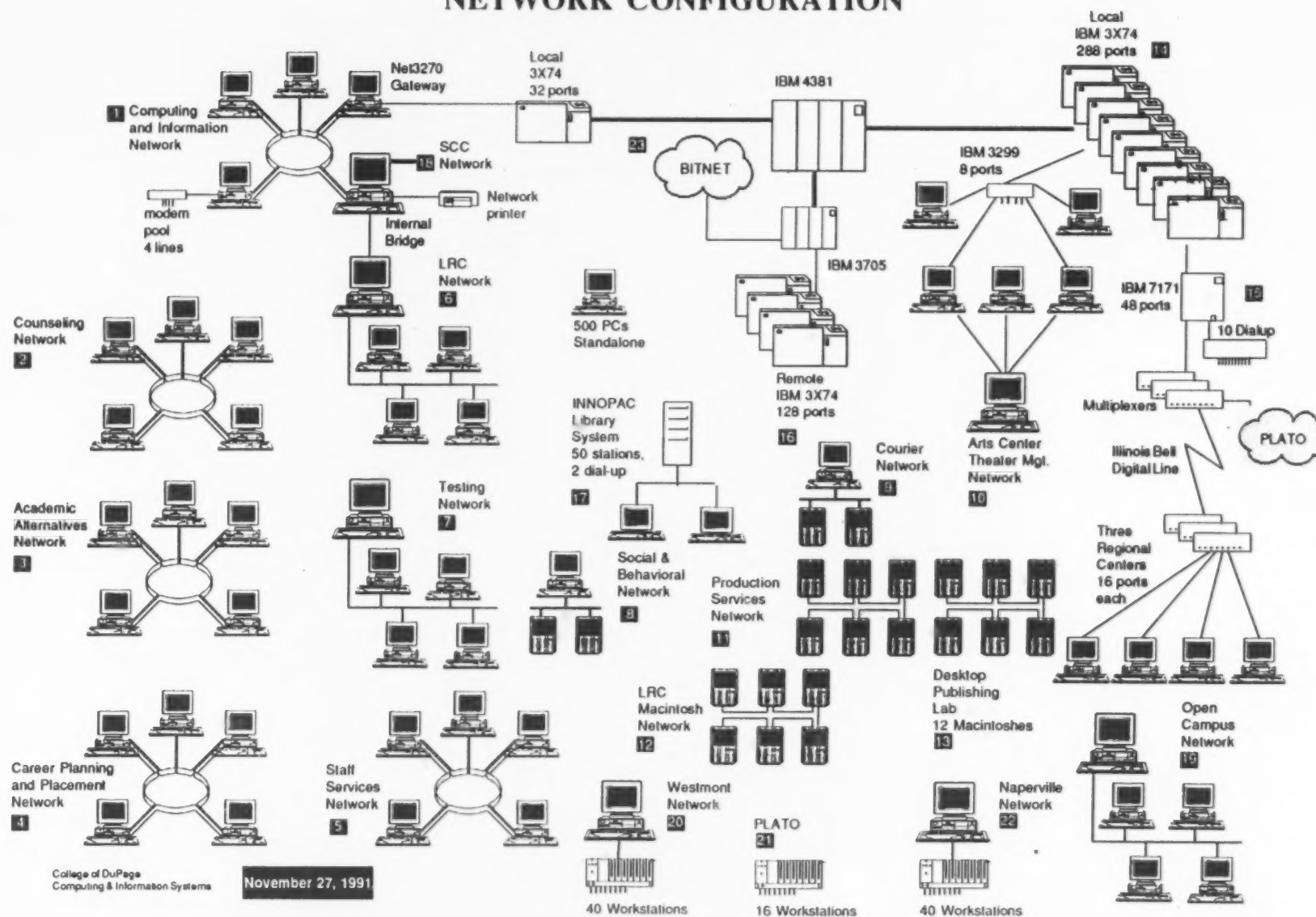
Rel 3.2A
Rel 11.0.D
Rel 2.1

February 7, 1992

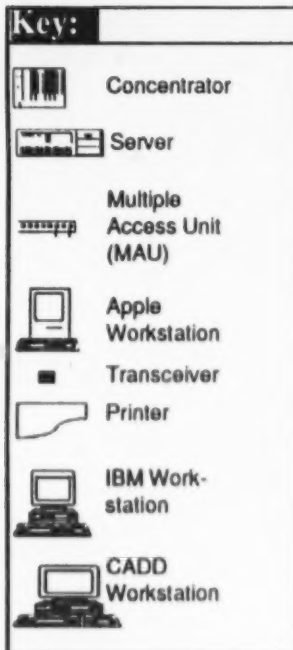
Appendix K. NETWORK CONFIGURATION

College of DuPage

NETWORK CONFIGURATION



February 7, 1992

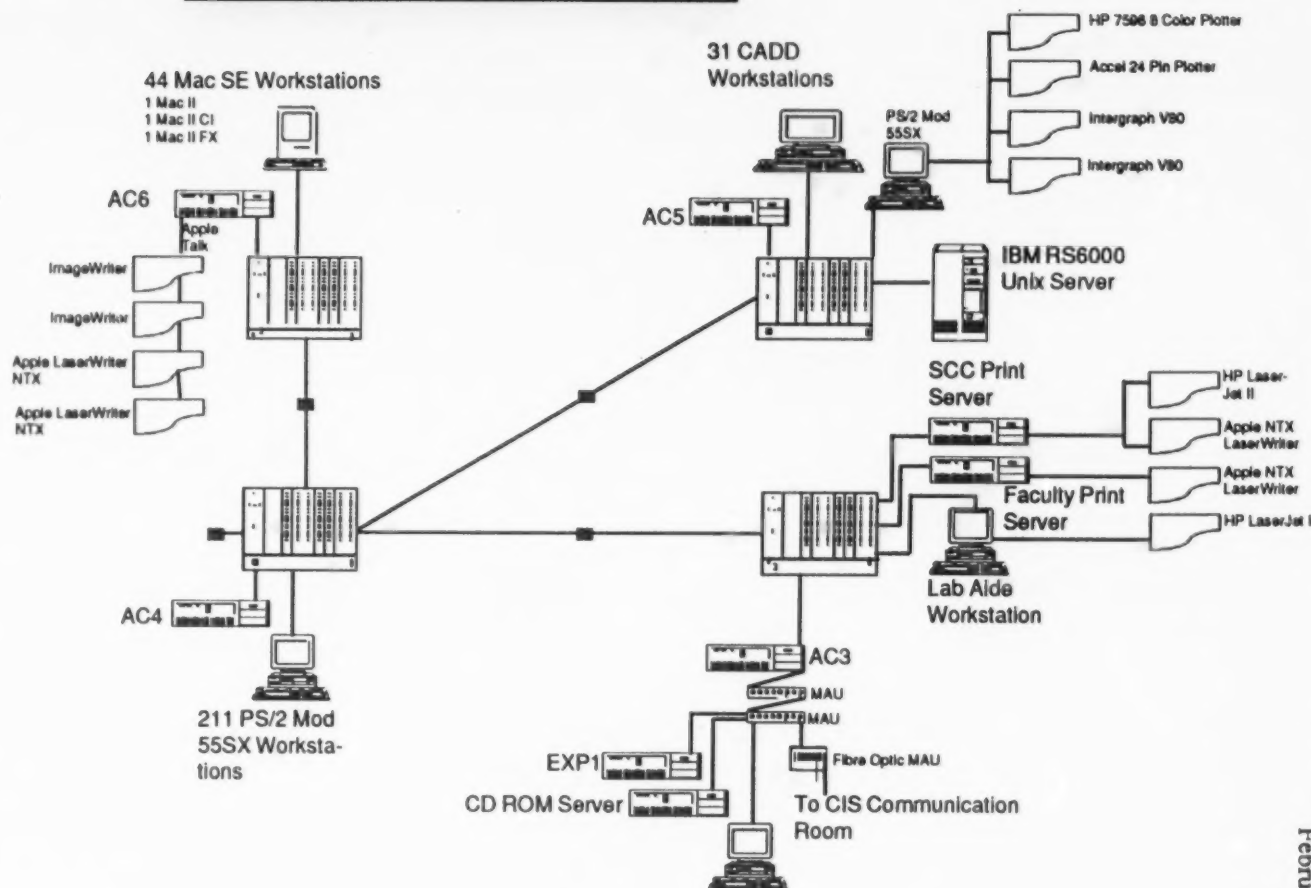


Servers:

EXP1
AC3
AC4
AC5
AC6
CDROM Server
SCC Print Server
Faculty Print Server
Unix Server (RS6000)

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Seaton Computing Center Network Configuration



College of DuPage

Network Descriptions

202 Institutional Plan For Computing FY93 - FY95

	Network Name	Location	Number of Workstations	Protocol	Topology	Operating System	Cabling	Main Applications	Bridges/ Gateways
1	Computing and Information	SCC (AC3)	14	IBM Token Ring	Token Ring	Novell NetWare 386 3.1	IBM Type 1 and fiberoptics	E-Mail, Development, Mainframe Access	SCC Academic Network, LRC, Net3270
2	Counseling	IC 2012	3	IBM Token Ring	Token Ring	Novell NetWare 286 2.15C	IBM Type 1	Scheduling, E-Mail	None
3	Academic Alternatives	IC third floor	14	IBM Token Ring	Token Ring	Novell NetWare 286 2.15C	IBM Type 1	Administrative Support	Net3270, Asynchronous, Dial-In
4	Career Placement & Planning	SRC 2044	5	Token Ring	Token Ring	Novell NetWare 286 2.15C	IBM Type 1	Shared Database (Job Planning)	None
5	Staff Services	IC 1005	12	IBM Token Ring	Token Ring	Novell NetWare 286 2.15A	IBM Type 1	Word Processing, OfficeWriter 6.1	None
6	LRC	SRC 3021	25	Ethernet	Bus	Novell NetWare 286 2.15C	RG58 Coaxial Throat	Software Distribution/Lab	Internal Bridge to C&I #1
7	Testing	SRC 2022	22	Ethernet	Bus	Novell NetWare 286 2.15	RG58 Coaxial Throat	Computerized testing	None
8	Social and Behavioral	IC 2014 NO LONGER EXISTS	6	TOPS	Bus	TOPS 3.0	Phonet-Unshielded twisted pair	Print and File Sharing	None
9	Courier	SRC 1022	5	TOPS	Backbone	AppleTalk 6.0.3	Phonet-Unshielded twisted pair	Desktop Publishing (Quark XPress, SuperPaint, PageMaker)	None
10	Arts Center	Arts Center	3	Arcnet	Star	Novell NetWare 286 2.12 A	RG62 Coaxial	Theater Management	None
11	Production Services	OCC 139	9	AppleTalk-TOPS	Bus	AppleTalk 6.0.3	Phonet-Unshielded twisted pair	Quark Xpress, Adobe Illustrator, SuperPaint	None
12	LRC Macintosh	LRC	17	AppleTalk	Backbone	AppleShare	Phonet-Unshielded twisted pair	MSWord	None
13	Desktop Publishing	IC 1111	12	AppleTalk	Bus	AppleTalk 6.0.3	Phonet-Unshielded twisted pair	Printsharing	None
14	IBM 3270 Local	Main Campus	268	3270 Bisynchronous Communications	Star	IBM VM/VSE	Coaxial RG-62	Various Mainframe Applications	Net3270
15	IBM 7171	Campus-wide regional centers	22	ASCII to EBCDIC	Star	IBM VM/VSE	Twisted pair	Protocol Converter	Asynchronous Dial-In
16	IBM 3270 Remote	Campus-wide	128	3270 Bisynchronous Communications	Star	IBM VM/VSE	Coaxial RG-62	Various Mainframe Applications	None
17	INNOPAC	LRC	50	Asynchronous	Star	Proprietary	Twisted pair	Card Catalog, Library Services	Asynchronous Dial-In
18	SCC Academic	SCC	294	Synoptics/Ethernet	Modified Bus/Star	Novell NetWare 386 3.1 (AC4 and AC5) and 286 2.15C (AC6)	Fiberoptics/ Unshielded Twisted Pair	Academic Instruction	Net3270, LRC Network, C&I Network, Dial-In lines

Location: IC—Instructional Center LRC—Learning Resource Center OCC—Open Campus Center SCC—Seaton Computing Center SRC—Student Resource Center

April 16, 1991

February 7, 1992

Network Descriptions (Continued)

	Network Name	Location	Number of Workstations	Protocol	Topology	Operating System	Cabling	Main Applications	Bridges/ Gateways
19	Open Campus	OCC 125	25	Ethernet	Bus	Novell NetWare 386 3.1	RG58 Coaxial	Academic Instruction	None
20	Westmont	Westmont Regional Center	40	Synoptics/Ethernet	Modified Bus/Star	Novell NetWare 386 3.1	Unshielded Twisted Pair	Academic Instruction	None
21	PLATO	Campus-Wide	18	Asynchronous	Star	University of Illinois Proprietary	Unshielded Twisted Pair	Academic Instruction	Dedicated to University of Illinois
22	Naperville	Naperville Regional Center	40	Synoptics/Ethernet	Modified Bus/Star	Novell NetWare 286 2.15C	Unshielded Twisted Pair	Academic Instruction	None
23	BITNET	SRC 2001	--	RSCS		IBM VM	--	National Research/Information, E-Mail	To Higher Education Institutions
		Total Workstations: 1050							

Location: IC—Instructional Center LRC—Learning Resource Center OCC—Open Campus Center SCC—Seaton Computing Center SRC—Student Resource Center

April 16, 1991

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February 7, 1992

Appendix L. CAMPUS BUILDINGS

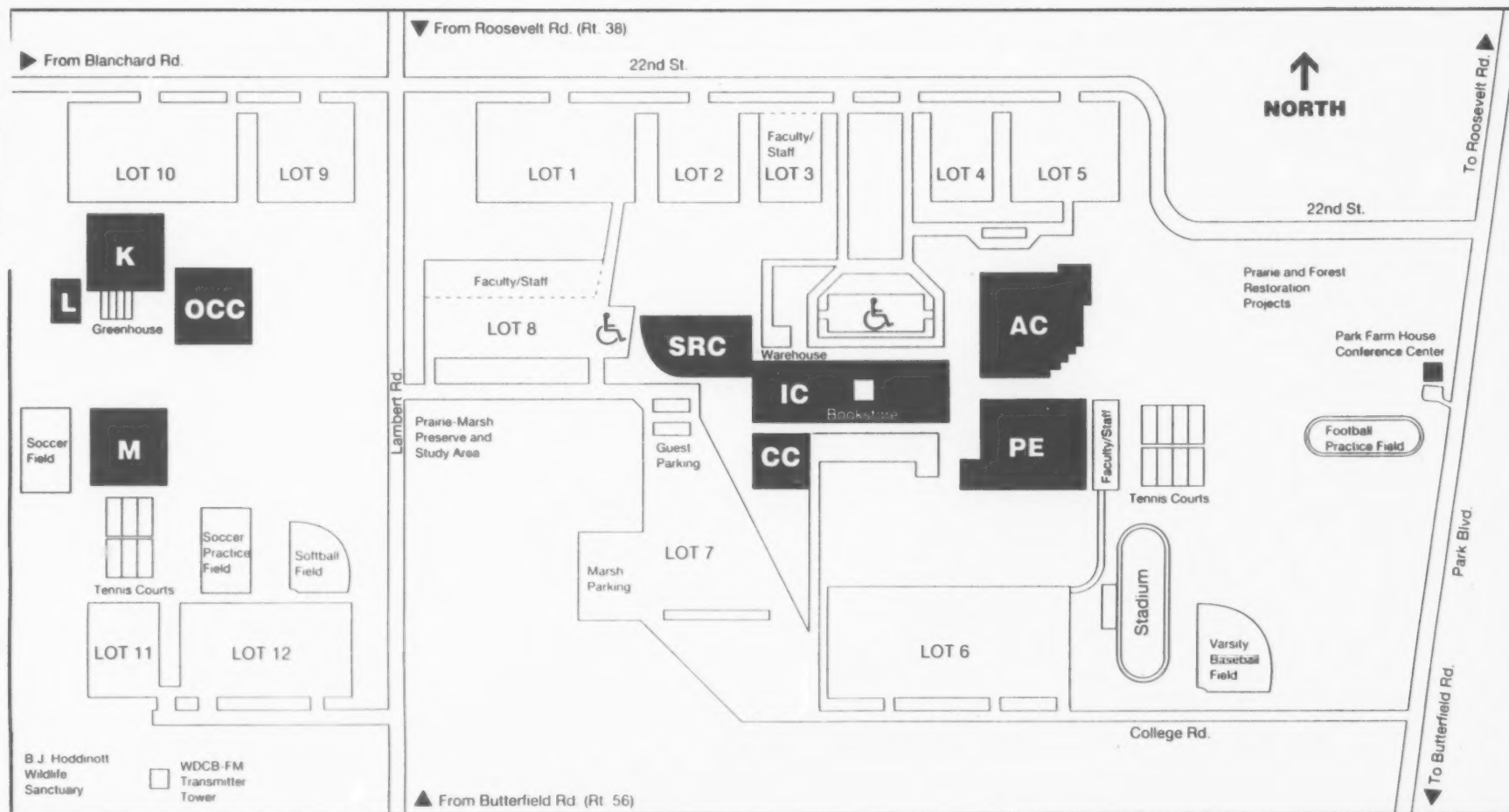
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206 22nd Street and Lambert Road
Glen Ellyn, IL 60137-6599
(708) 858-2800

Institutional Plan For Computing FY93 - FY95

LEGEND

AC	Arts Center	OCC	Open Campus Center
CC	Computing Center	PE	Physical Education and Community Recreation Center
IC	Instructional Center	SRC	Student Resource Center
K	Building K		
M	Building M (Multi-University)		



February 7, 1992

Revised 3/90

February 7, 1992

Appendix M. HARDWARE PROGRAM

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COMPUTER HARDWARE PROPOSAL

Faculty Member's Name _____

Division/Department _____

Office _____ Tel Ext _____ Date _____

Please answer the following questions as completely as possible. If you need more space, please append additional materials. Thank you!

a. Curricular Area: _____

(Provide the Following if Applicable)	
New Course _____	Existing Course _____
Course Title: _____	Course Number: _____
Project Title: _____	
Students per week _____	Computer Lab Hours per week: _____

b. Where will this equipment be used: _____

c. Please submit narrative responses to each of the following:

1. Provide a general topical outline defining the major units of instruction that will utilize computer equipment and how the requested equipment will be used in the development process (or clearly define the project with which you propose to use computer equipment).
2. How was the student/staff need for this equipment determined?
3. How does this computer utilization relate to others in this discipline/program?
4. What resources will be needed to support this proposal/project? (Consider the area below and be as specific as possible)

a. Space/Furniture	c. Computer Software	e. Training
b. Computer Hardware	d. Installation Support	f. Personnel
5. Does this utilization have interdisciplinary impact with other divisions? How has it been articulated?

d. Estimated Project Completion Date: _____

Approvals:

Divisional Committee	Date	Dean	Date	ACPAC Chairperson	Date
----------------------	------	------	------	-------------------	------

Comments: _____

COMPUTING AND INFORMATION SYSTEMS

Ordered _____ Received _____

Help Desk _____ Installed _____

FACRESEH
Revised 3/28/91

283

COMPUTER HARDWARE PROPOSAL

INSTRUCTIONS

Academic Computing Planning Advisory Committee has a budget to fund hardware needs to assist faculty in the investigation of new technologies to be used for instruction. The funds can be used for the purchase of computer equipment in the exploration of new applications and the development of instructional software to be incorporated in the curriculum. Some of the new instructional/informational delivery systems may include CD-ROM, interactive video, graphics, and personal computers.

For any software needed with this request please fill out a software request proposal form and attach.

Proposal & Evaluation Procedures:

First consideration will be given to those proposals submitted to Division Computer Committee on or before the date specified in the announcement memo.

Faculty members requesting computer hardware funds should complete the following steps:

1. Complete the reverse side.
2. Give the completed form to your Division Computer Committee for review, recommendation, and prioritization. The Division Computer Committee must forward the proposal to the Division Dean for review.
3. The Division Dean must submit all recommended proposals to Computing and Information Systems by April 1 and November 1 each year.
4. Proposal approvals will be based upon the potential benefit for an individual and/or group development, potential impact on students, relationship to institutional mission, and cost/benefit.
5. The ACPAC committee will meet regularly to review the proposals submitted to the committee. Computing and Information Systems will officially notify faculty member(s) of the outcome.
6. The faculty member will submit a written summary of the project to his/her Division Dean and Division Computer Committee within two weeks of the completion date indicated on the proposal request form.
7. The Division Dean will forward a copy of the faculty summary to the ACPAC chairperson.
8. Any future use of the equipment will be evaluated based on the faculty summary and the future benefit to the instructional process.
9. All hardware will remain the property of the College of DuPage.

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FACRESEH
Revised 3/28/91

February 7, 1992

February 7, 1992

Appendix N. TRAVELING '50' PROGRAM

285

TRAVELING '50' PROPOSAL

Proposer's Name(s) _____

Division/Department _____

Office _____ Tel Ext _____ Date _____

Please answer the following questions as completely as possible. If you need more space, please append additional materials. If your request is for a team or group of faculty, please furnish the names of your colleagues. Thank you!

- a. Please indicate how you would use this system (see attached description) to explore computer applications for instruction.

[illegible]

- b. Indicate how you will provide feedback to the committee on the outcome of your project and the estimated completion date of the project.

- c. Identify the quarter you will need the computer: 1st Priority: _____ 2nd Priority: _____

Approvals:

Divisional Committee	Date	Dean	Date	ACPAC Chairperson	Date
----------------------	------	------	------	-------------------	------

Comments:

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COMPUTING AND INFORMATION SYSTEMS USE ONLY

Delivered		Returned
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TRAVEL 50
Revised 3/28/91

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TRAVELING '50' PROPOSAL

INSTRUCTIONS

An IBM System 2, Model 50 computer is available to individual or teams of faculty for use in the exploration of the application of computer technology to instruction. The machine will be available to faculty as a temporary loan. Initially, the loan period will not be longer than one quarter.

The system configuration is as follows:

**1MB RAM on Main Board
One 20MB Fixed Disk Drive
One 1.44 3.5" Disk Drive
Full Character Enhanced Keyboard
Serial/Asynchronous Port
Parallel Port**

Pointing Device Port
 5.25" External 360KB Disk Drive
 IBM Pro-Printer II
 Workstation Table & Lock
 IBM Color Display w/Display Cable
 DOS 3.3

Proposal & Evaluation Procedures:

First consideration will be given to those proposals submitted to Division Computer Committee on or before the due date.

Faculty members requesting the Traveling '50' should complete the following steps:

1. Complete the attached Traveling '50' Proposal.
2. Give the completed form to your Division Computer Committee for review, recommendation, and prioritization. The Division Computer Committee must forward the proposal to the Division Dean for review.
3. The Division Dean must submit all recommended proposals to Computing and Information Systems by the second week of each quarter.
4. Proposal approvals will be based upon the potential benefit for an individual and/or group development, potential impact on students, relationship to institutional mission, and cost/benefit.
5. The ACPAC committee will meet regularly to review the proposals submitted to the committee. Computing and Information Systems will officially notify faculty member(s) of the outcome.
6. The faculty member will submit a written summary of the project to his/her Division Dean and Division Computer Committee within two weeks of the completion date indicated on the proposal request form.
7. The Division Dean will forward a copy of the faculty summary to the ACPAC chairperson.

February 7, 1992

TRAVEL 50
Revised 3/28/91

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February 7, 1992

Appendix O. TRAVELING 'MAC' PROGRAM

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TRAVELING 'MAC' PROPOSAL

Proposor's Name(s) _____

Division/Department _____

Office _____ Tel Ext _____ Date _____

Please answer the following questions as completely as possible. If you need more space, please append additional materials. If your request is for a team or group of faculty, please furnish the names of your colleagues. Thank you!

- a. Please indicate how you would use this system (see attached description) to explore computer applications for instruction.

- b. Indicate how you will provide feedback to the committee on the outcome of your project and the estimated completion date of the project.

- c. Identify the quarter you will need the computer: 1st Priority: _____ 2nd Priority: _____

Approvals:

Divisional Committee	Date	Dean	Date	ACPAC Chairperson	Date
----------------------	------	------	------	-------------------	------

Comments: _____

COMPUTING AND INFORMATION SYSTEMS USE ONLY

Delivered _____ Returned _____

TRAVELMA
Revised 3/28/91

289

TRAVELING 'MAC' PROPOSAL

INSTRUCTIONS

Two MAC II CI microcomputers are available to individual or teams of faculty for use in the exploration of the application of computer technology to instruction. The microcomputers will be available to faculty as a temporary loan. Initially, the loan period will not be longer than one quarter.

The system configuration is as follows:

Apple Macintosh II CI
4 MB of Memory
One 80 MB Fixed Disk Drive
One 3.5" Floppy Disk Drive

Extended Keyboard
Mouse
Image Writer II Printer
Apple Color Monitor

Proposal & Evaluation Procedures:

First consideration will be given to those proposals submitted to Division Computer Committee on or before the due date.

Faculty members requesting the Traveling 'MAC' should complete the following steps:

1. Complete the attached Traveling 'MAC' Proposal.
2. Give the completed form to your Division Computer Committee for review, recommendation, and prioritization. The Division Computer Committee must forward the proposal to the Division Dean for review.
3. The Division Dean must submit all recommended proposals to Computing and Information Systems by the second week of each quarter.
4. Proposal approvals will be based upon the potential benefit for an individual and/or group development, potential impact on students, relationship to institutional mission, and cost/benefit.
5. The ACPAC committee will meet regularly to review the proposals submitted to the committee. Computing and Information Systems will officially notify faculty member(s) of the outcome.
6. The faculty member will submit a written summary of the project to his/her Division Dean and Division Computer Committee within two weeks of the completion date indicated on the proposal request form.
7. The Division Dean will forward a copy of the faculty summary to the ACPAC chairperson.

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TRAVELMA
Revised 3/28/91

February 7, 1992

February 7, 1992

Appendix P. SUITE COMPUTER PROGRAM

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FACULTY SUITE
COMPUTER WORKSTATION PROPOSAL

Faculty Member's Name _____

Division/Department _____

Office _____ Tel Ext _____ Date _____

Please answer the following questions as completely as possible. If you need more space, please append additional materials. Thank you!

a. Proposed location for the computer workstation _____

b. Are any other members of your suite requesting a computer workstation at this time? _____

If so, please list names and divisions.

Name	Division
_____	_____
_____	_____
_____	_____
_____	_____

c. Computer Workstation Requested (please circle one) **IBM** **Macintosh**

d. Please discuss the reasons why you believe this computer workstation should be placed in your faculty suite.

Approvals:

Divisional Committee Date Dean Date ACPAC Chairperson Date

Comments: _____

COMPUTING AND INFORMATION SYSTEMS USE ONLY

Ordered _____ Received _____

Help Desk _____ Installed _____

WKSTATPR
3/28/91

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FACULTY SUITE
COMPUTER WORKSTATION PROPOSAL
INSTRUCTIONS

The College of DuPage Institutional Plan for Computing calls for providing microcomputer workstations to be placed in faculty office suites for the following uses:

- Preparation of course materials, management of instruction
- Instructor-student consultation concerning computer-related assignments
- Exploration of new applications, development of instructional software
- Networked access to lab software
- Networked communication with other faculty or support staff

The configurations follow:

IBM PS/2 Model 55's

One MB RAM on Main Board
One 30 MB Fixed Disk Drive
One 1.44 MB/720KB Disk Drive
Serial/Asynchronous Port and Parallel Ports
Pointing Device Port

5.25" External 360KB Disk Drive
IBM ProPrinter II
IBM Color Monitor
Workstation Table and Lock

Software: an operating system; menu system (Automenu); an easy to use word processor, spread sheet, data base and graphics (PFS First Choice); Word Processor (Officewriter).

Macintosh SE

One MB RAM
One 20 MB Hard Disk Drive
One super 3.5" Disk Drive

Hi-Resolution Black/White Monitor
Imagewriter II Printer
Workstation Table and Lock

Software: a basic operating system and utilities; a word processor (Microsoft WORD); a spread sheet (EXCEL); a data base (HYPERCARD).

Proposal and Evaluation Procedures:

First consideration will be given to those proposals submitted to the Division Computer Committee on or before the specified date.

1. Complete the attached Faculty Suite Computer Workstation Request Proposal form. If more than one faculty member from a suite wishes to request a computer workstation, each member should complete a Computer Workstation Request proposal form. Attach all forms from one suite together.
2. Give the completed form to your Division Computer Committee for review, recommendation, and prioritization. The Division Computer Committee must forward the proposal to the Division Dean for review.
3. The Division Dean must submit all recommended proposals to Computing and Information Systems by May 1st of each year for consideration in the next school year.
4. Proposal approvals will be based upon the potential benefit for an individual and/or group development, potential impact on students, relationship to institutional mission, and cost/benefit.
5. The ACPAC committee will meet regularly to review the proposals submitted to the committee. Computing and Information Systems will officially notify faculty member(s) of the outcome.

WKSTATPR
3/28/91

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February 7, 1992

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Appendix Q. SOFTWARE PROGRAM

294

SOFTWARE PROPOSAL

Faculty Member's Name _____

Division/Department _____

Office _____ Tel Ext _____ Date _____

Please answer the following questions as completely as possible. If you need more space, please append additional materials. If your request is for a team or group of faculty, please furnish the names of your colleagues. Thank you!

a. Identify the computer system and media for which the software will be used:

IBM - Model _____ Apple - Model _____

b. Please indicate the type (e.g., authoring system, test bank, programming language, etc.), brand name (e.g., LOTUS 1-2-3, Microsoft Word, etc.) and estimated cost of the software. Please provide vendor information.

Type	Brand Name	Estimated Cost
_____	_____	_____
_____	_____	_____
_____	_____	_____

c. Write a brief paragraph indicating your anticipated use for software, its educational utility, and any indication of its applicability for the College of DuPage program as a whole. Please attach any copies of software reviews or advertisements. Indicate also if other College of DuPage faculty might have use for the software.

d. Please indicate if there are other possible uses for the software.

Approvals:

Divisional Committee Date _____ Dean Date _____ ACPAC Chairperson Date _____

Comments: _____

COMPUTING AND INFORMATION SYSTEMS USE ONLY

Ordered _____ Received _____

Help Desk _____ Installed _____

SOFTACPC
Revised 3/28/91

SOFTWARE PROPOSAL

INSTRUCTIONS

ACPAC encourages you to take advantage of the funds available for the purchase of computer software. Our mission is to encourage computer usage by faculty. To facilitate the process we have made the application simple and criteria straightforward. Funds are available not only for the accomplished computer person, but also for those new to computing.

To qualify for funding the software should directly support instruction. This support includes instructional software, software appropriate for educational or classroom management, and software development tools (e.g., authoring languages and systems, and programming languages and utilities).

We remind you that all the computers in faculty suites are bundled with a basic set of software packages. This includes an operating system, basic utilities, and an easy to use word processor, spread sheet, data base, and graphics system called First Choice. Additionally, the IBM machines include a more sophisticated word processor (Office Writer). The MACs will include basic operating system and utilities, Microsoft Word, EXCEL (spread sheet), and Hypercard (data base).

Proposal & Evaluation Procedures:

First consideration will be given to those proposals submitted to Division Computer Committee on or before the date specified in the announcement memo.

Faculty members requesting software funds must complete the following steps:

1. Complete the attached Software Request Proposal Form.
2. Give the completed form to your Division Computer Committee for review, recommendation, and prioritization. The Division Computer Committee must forward the proposal to the Division Dean for review.
3. The Division Dean must submit all recommended proposals to Computing and Information Systems by the first work day of the month.
4. Proposal approvals will be based upon the potential benefit for an individual and/or group development, potential impact on students, relationship to institutional mission, and cost/benefit.
5. ACPAC committee will meet regularly to review the proposals submitted to the committee. Any requests for software over \$1,000 will not be reviewed until the spring quarter of each year. Computing and Information Systems will officially notify faculty member(s) of the outcome.
6. The faculty member will submit a written summary of the evaluation of the software to his/her Division Dean and the Division Computer Committee by the end of the fiscal year in which the software was purchased. An evaluation form will be distributed to assist you in the summary. The summary should describe how the software is being used for instruction or instructional support.
7. The Division Dean will forward a copy of the faculty summary to the ACPAC chairperson.
8. *All software will remain the property of the College of DuPage.

February 7, 1992

Appendix R. FACULTY DEVELOPMENT PROGRAM

FACULTY DEVELOPMENT PROPOSAL

Faculty Member's Name _____

Division/Department _____

Office _____ Tel Ext _____ Date _____

Please answer the following questions as completely as possible. If you need more space, please append additional materials. If your request is for a team or group of faculty, please furnish the names of your colleagues. Thank you!

a. Please state amount of funding requested (if possible, itemize) _____

b. Do you anticipate funding from other sources? If so, amount, from whom? _____

c. Please give a brief description of how and when you plan to use this funding. _____

_____d. Please give a brief overview of how this project will affect your professional function at College of DuPage. Include your specific educational goals or needs you wish to accomplish and the effect your development project will have on students and/or other staff at the College. _____

e. Date of project completion. _____

Approvals:

Divisional Committee Date Dean Date ACPAC Chairperson Date

Comments: _____

COMPUTING AND INFORMATION SYSTEMS USE ONLY

Reimbursed _____

FACDEVOL
Revised 3/28/91

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FACULTY DEVELOPMENT PROPOSAL

INSTRUCTIONS

ACPAC has funding available to support computer-related faculty development. Both full- and part-time faculty are eligible to present proposals. To be eligible, a Computer-Related Faculty Development Proposal must focus on the use or study of computers to assist the faculty member in the improvement of his/her professional function at the College of DuPage.

Faculty Development Proposals can involve a variety of computer-related improvement projects. The list below is intended to merely suggest possibilities. A maximum of \$250 is allowed for each request.

- Travel stipends to be used with other funds to attend computer-related conferences and meetings.
- Travel stipends to enable individuals or groups to visit appropriate computer-related sites.
- Honorariums or consulting fees to be used to bring experts and/or materials to the College for computer-related seminars or workshops.
- Appropriate seminars or course fee.

Application & Evaluation Procedures:

First consideration will be given to those proposals submitted to Dean/Division Computer Committee on or before the date specified in the announcement memo.

Faculty members requesting Computer-Related Faculty Development Proposal Form should complete the following steps:

1. Complete the attached Request for Computer-Related Faculty Development Funds.
2. Give the completed form to your Division Computer Committee for review, recommendation, and prioritization. The Division Computer Committee must forward the proposal to the Division Dean for review.
3. The Division Dean must submit all recommended proposals to Computing and Information Systems by the first work day of the month.
4. Proposal approvals will be based upon the potential benefit for an individual and/or group development, potential impact on students, relationship to institutional mission, and cost/benefit.
5. The ACPAC committee will meet regularly to review the proposals submitted to the committee. Computing and Information Systems will officially notify faculty member(s) of the outcome.
6. The faculty member will submit a written summary of the project to his/her Division Dean and Division Computer Committee within two weeks of the completion date indicated on the proposal request form.
7. The Division Dean will forward a copy of the faculty summary to the ACPAC chairperson.
8. Unused advances must be returned.

FACDEVOL
Revised 3/28/91

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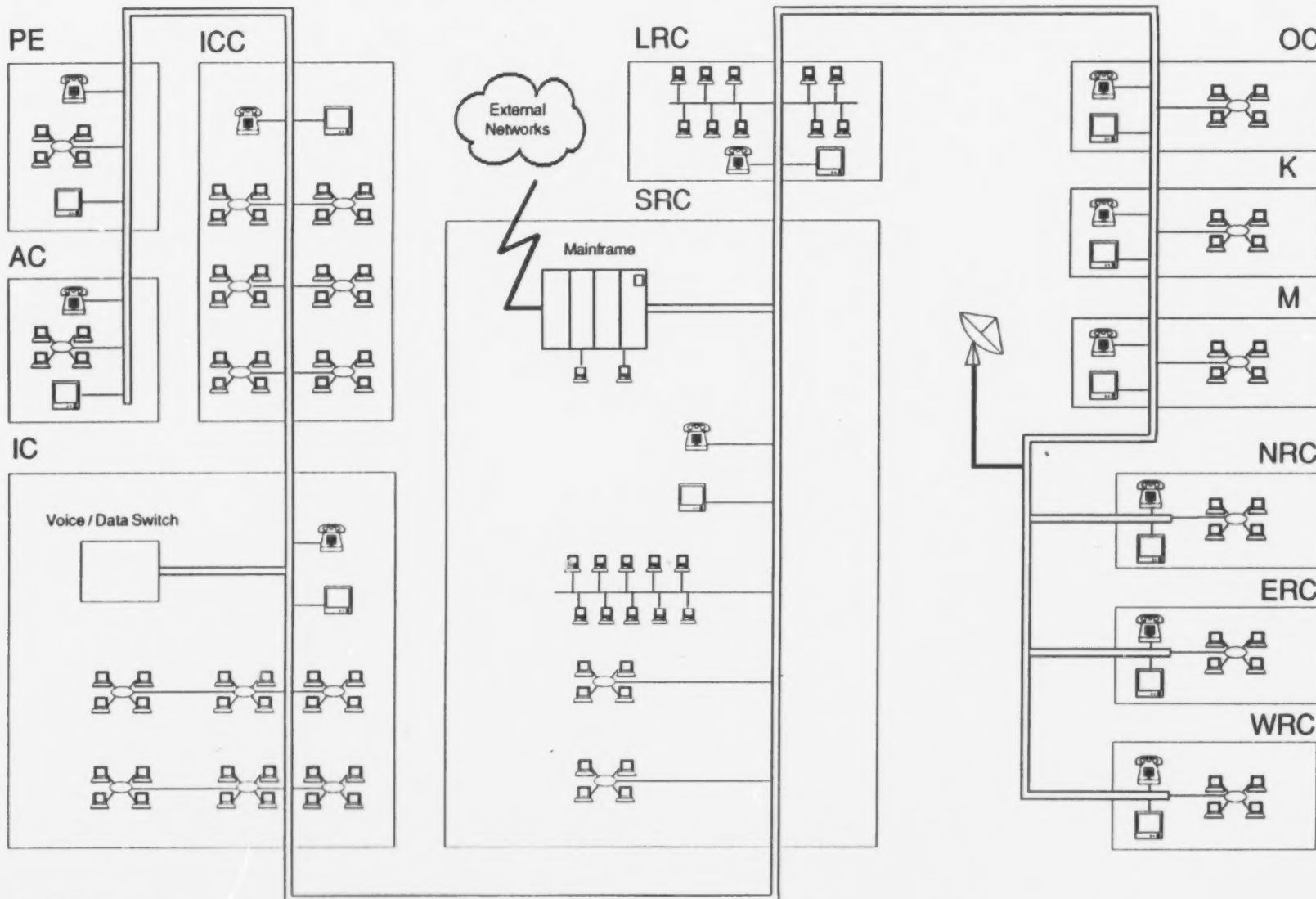
February 7, 1992

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Appendix S. FUTURE NETWORK CONFIGURATION

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College of DuPage FUTURE NETWORK CONFIGURATION



February 7, 1992

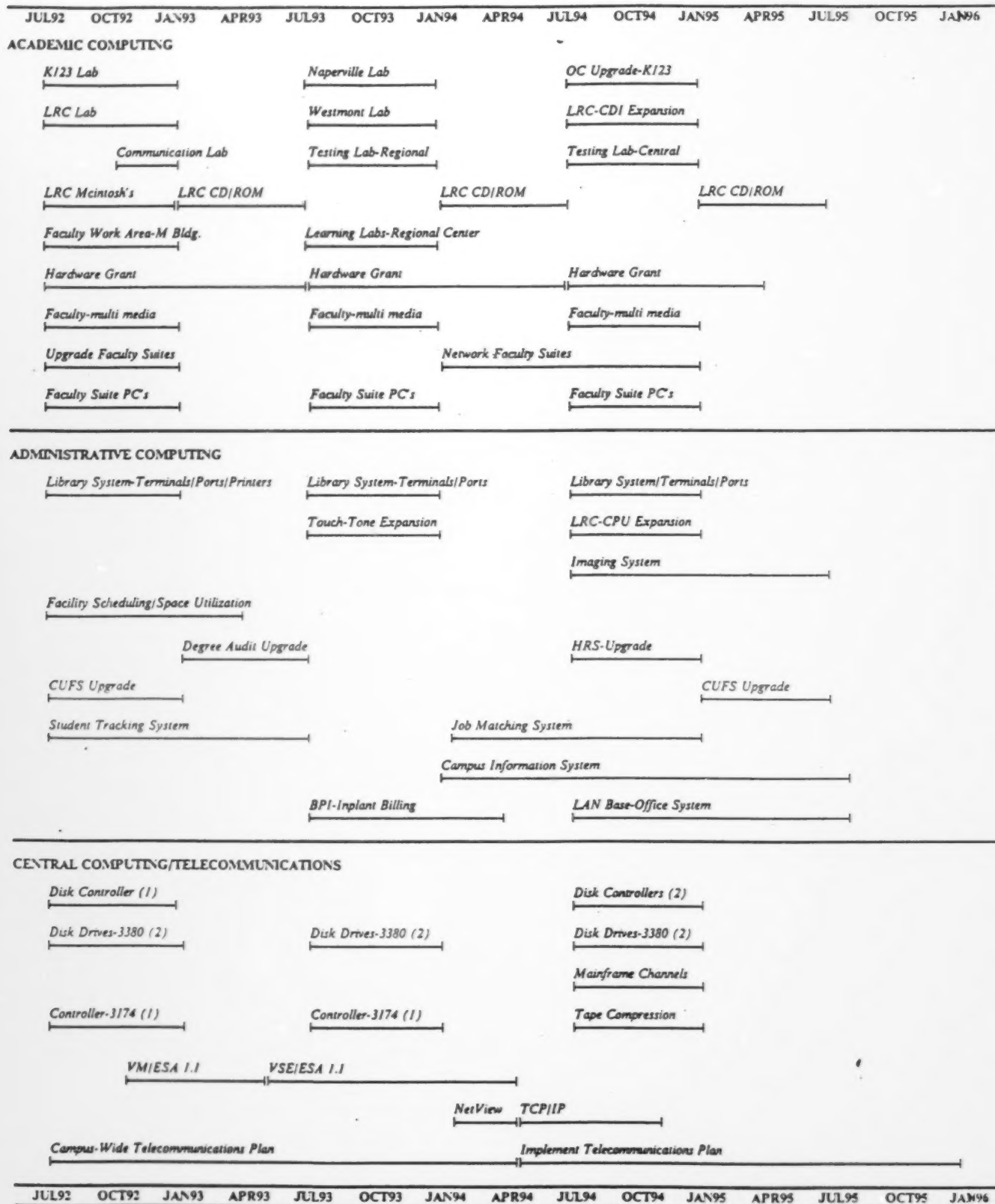
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Appendix T. PLANNING CYCLE FY93-FY96

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February 7, 1992

COMPUTING AND INFORMATION SYSTEMS PLANNING CYCLE FY93-FY96



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